THE ARCHITECT & BUILDING NEWS

15 DECEMBER 1955 · VOL 208 · NO. 24 · ONE SHILLING WEEKLY

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- **ELECTRICAL SPACE HEATING: 1**

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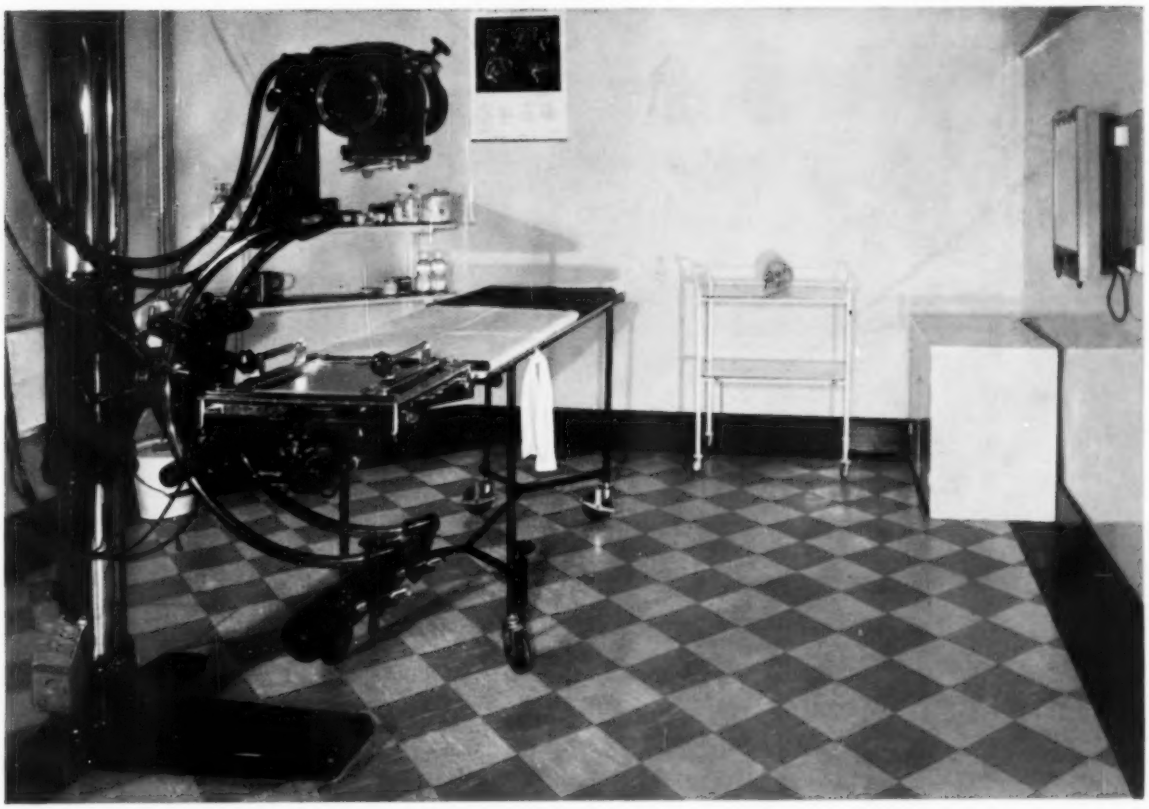

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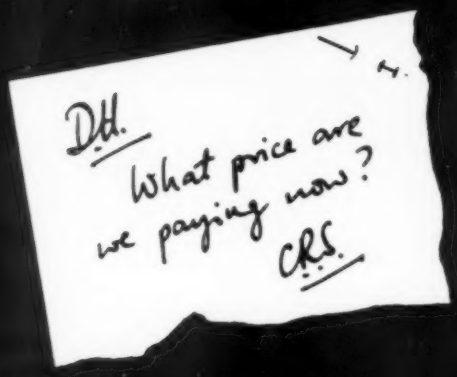

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B

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(a) the cost of appliance and installation
(b) cost of fuel
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$\therefore$ *Since* $a+b+c+d =$ *the cost of Heating Service it may be seen that the Potterton Oil-Fired Boiler is the most economical means of supplying hot water for central heating and domestic purposes if oil is the fuel to be used.*

Note: *The output of any DOA Series Boiler is given by B.Th.U./Hr.* $= 36000x$, *where* x *= number of sections and can have integral values from 3 to 8.*

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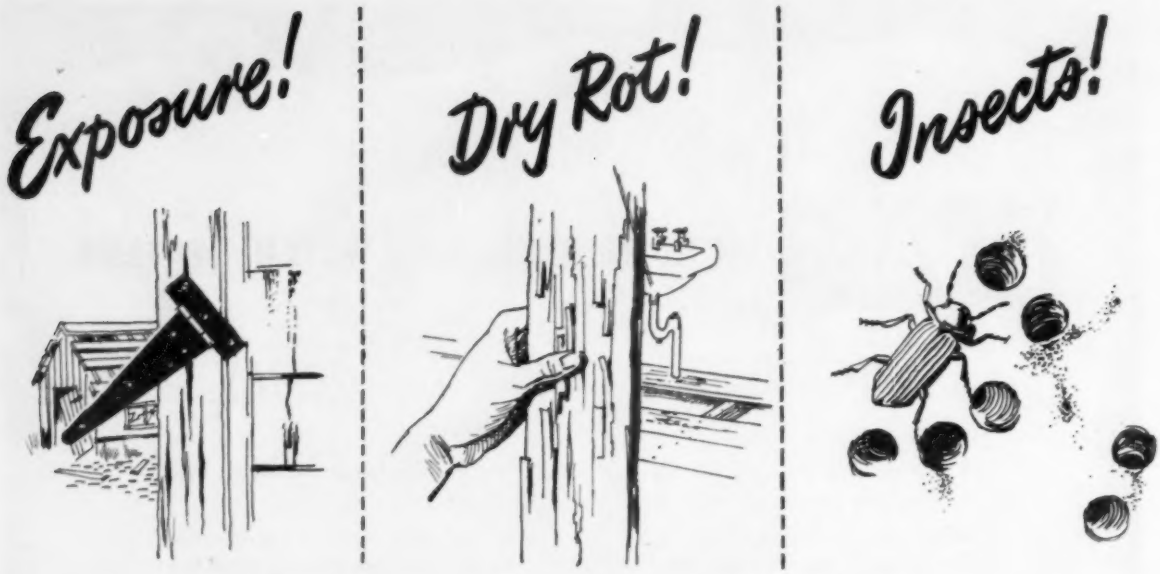

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I wrote to DUSSEK...

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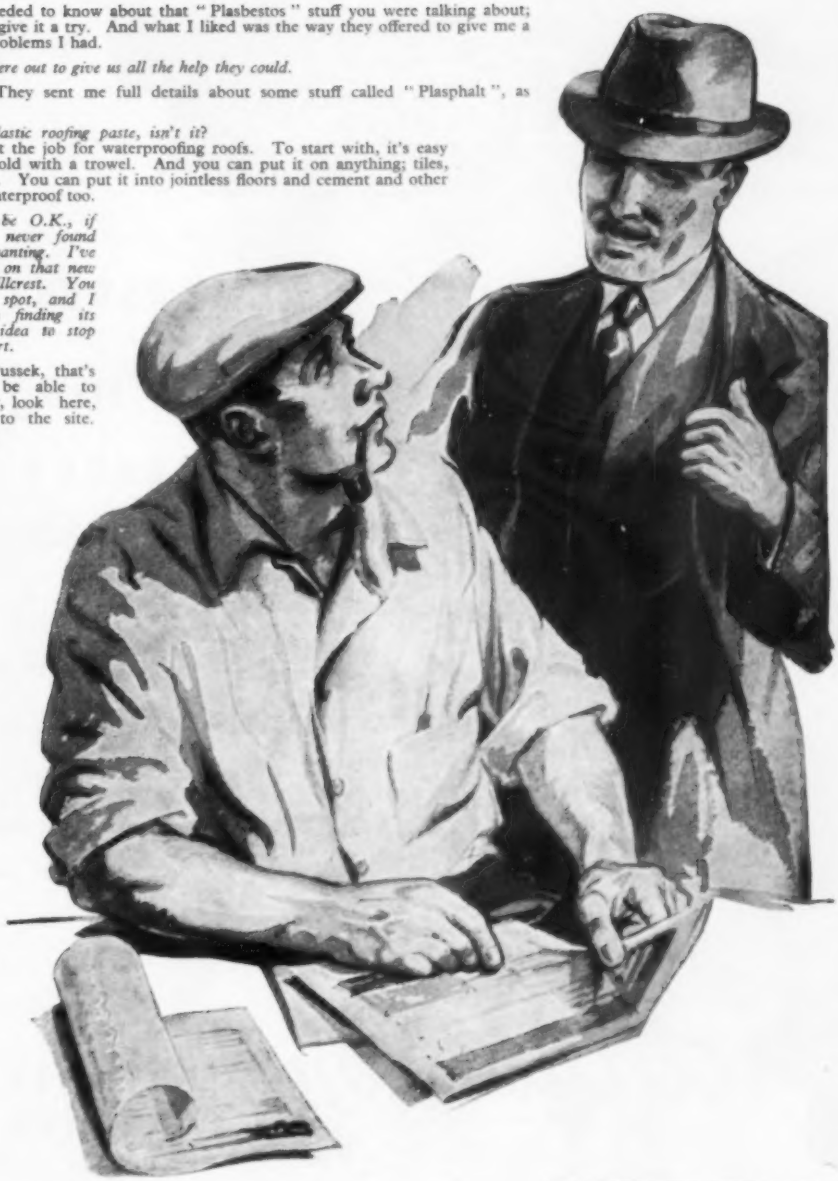
Well, I told you they were out to give us all the help they could.

You're right there. They sent me full details about some stuff called "Plasphalt", as well.

I've heard of that—Plastic roofing paste, isn't it?
Yes. I reckon it's just the job for waterproofing roofs. To start with, it's easy to put on—spread it cold with a trowel. And you can put it on anything; tiles, zinc, concrete—the lot. You can put it into jointless floors and cement and other mixes to make them waterproof too.

You can bet it will be O.K., if Dussek make it; I've never found anything of theirs wanting. I've a good mind to put it on that new property of mine at Hillcrest. You know it's an exposed spot, and I don't want any rain finding its way in there. Good idea to stop the leaks before they start.

Well, if you go to Dussek, that's one problem you'll be able to forget about . . . hey, look here, I'd better get back to the site. See you again.



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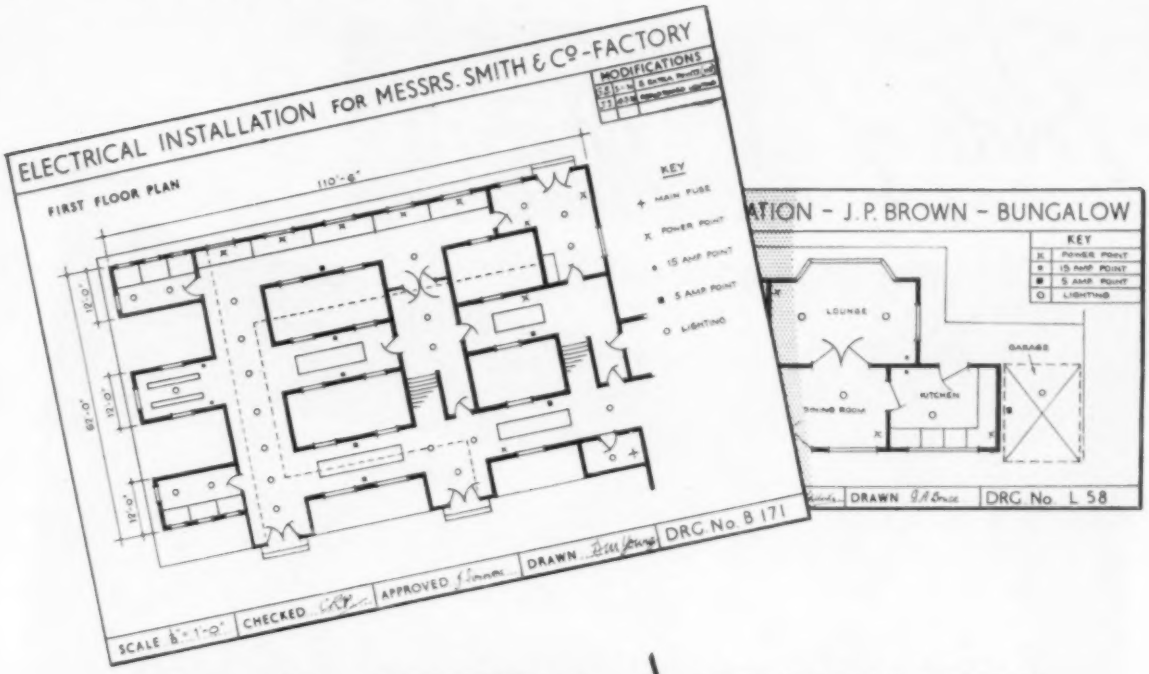

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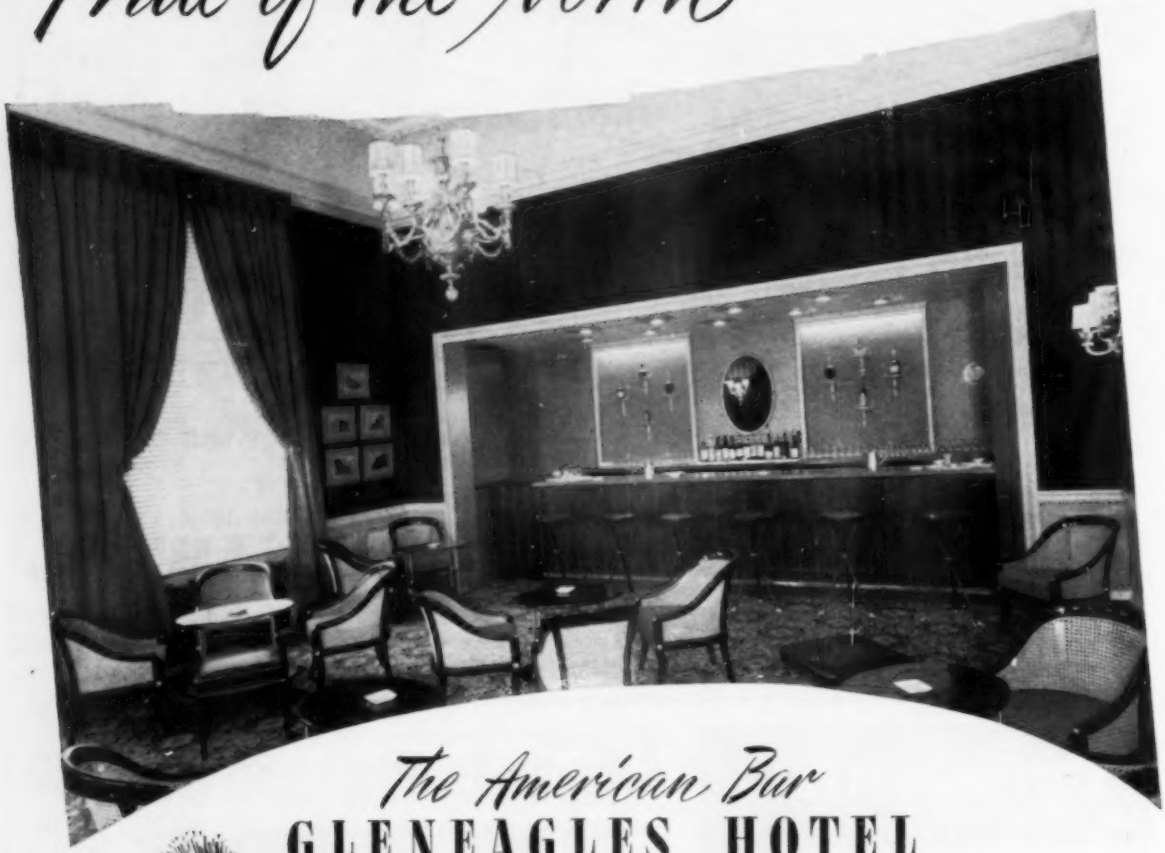
Pride of the North



The American Bar
GLENEAGLES HOTEL

By courtesy of Hotels and Catering Services of British Transport Commission.

Perthshire can indeed be proud of its famous Gleneagles Hotel, long recognised as one of Scotland's most luxurious establishments, and so when modification of the American Bar was needed, Gaskell & Chambers were commissioned to carry out the work as follows:—

The counter, buffet, seating, surrounds, venetian blinds, light fitments and false ceiling in the Servery; the counter front in Spanish Mahogany set with vertical polished brass rods, with a footrest of brass angle; the counter top in blue Kingdecor plastic; the walls, papered in two shades of green, and the rest of the woodwork in two tones of grey, and the radiator grilles and light fittings in the Servery in polished brass.

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THE ARCHITECT & BUILDING NEWS

15 December 1955

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THE ALLIED SOCIETIES

THE Town and Country Planning Act of 1947 largely completed the long process of delegation of power from central to local government in regard to building matters begun by the local government acts in the middle of the last century. Since the war the need for the direction and application of organised architectural opinion on a regional and local basis has been greater than ever. On paper, at least, the machinery for this does exist but its aptitude for the task has been questioned in some quarters recently.

The R.I.B.A., unlike most of the other comparable professional institutions, has no branches. The needs of members in the provinces, and overseas for that matter, are served by a framework of independent and autonomous architectural societies in "alliance" with the R.I.B.A. Membership of these societies is open to other than R.I.B.A. members: some include surveyors. These societies, with their branches and chapters, are distributed geographically to cover the whole of the United Kingdom. As they are the result of a process of growth rather than of a single plan their characters are various, their sizes uneven and, understandably, their outlooks diverse. They are financed largely by a rebate of one-third of his subscription paid by the R.I.B.A. for every R.I.B.A. member who is a member of each society. They appoint representatives to serve on the R.I.B.A. Council and through the Allied Societies' Conference they can express their opinions to the R.I.B.A.

The machinery within the United Kingdom by which the R.I.B.A. keeps itself in touch with local opinion thus appears adequate, but it is much more doubtful whether the machine works adequately in reverse, as it were. An allied society is not "under command" of the R.I.B.A. It is an ally. It may reject, though it very seldom does, an expression of R.I.B.A. policy on any matter of general interest. But, what is more important, it is the only instrument available to the R.I.B.A. in the particular area for pressing for the implementation locally of that policy. Since so much government authority in the building world is delegated to local authorities, County, City and District Councils, pronouncements by the R.I.B.A. at national level have little effect unless pressed home at these more dispersed levels by the local agents or allies.

The Allied Societies, then, are the field formations which must fight for the acceptance of the R.I.B.A. policy which they in their other capacity have had a hand in framing. It was said in the war that there were no good or bad battalions, only good and bad commanding officers. This is to some extent applicable to the Allied Societies. Apart from one or two comparatively rich urban societies the officers of societies, branches and chapters are all honorary, and a heavy additional burden must consequently fall on a number of busy architects, whether in private or official practice. The activity and effectiveness of the organisation, be it a centralised urban society or a scattered rural branch, will depend almost entirely on the energy of the chairman and honorary secretary.

It has been suggested that the hand of an allied society in local affairs would be strengthened if it were more closely incorporated into the R.I.B.A. The "West Blankshire Society of Architects" is not immediately connected in the lay mind with the R.I.B.A. but there would be no doubt about the "West Blankshire Branch of the R.I.B.A." This does not seem a very substantial point and there should be little difficulty if every opportunity is taken for close contact with those in responsible positions in local government circles. It would be better still if far more architects took a hand in local affairs by being elected to County and Borough Councils.

In some areas there is an inclination by private practitioners to look on the allied society as a protective association and to measure its value by the extent to which it upholds private against official practice. That is not the job of any architectural society. Whatever view is taken of the proper function of an allied society, any internal discord can do nothing but weaken its influence

in local affairs. At a time when the pressure on the architectural profession from without is so heavy the only policy that gives any hope of success is one of complete unity in fighting for these things essential to architecture. Benefits to the individual architect will follow success as a matter of course.

The real contribution the Allied Societies in the United Kingdom have to make is in wise guidance in local affairs. So much of this is best done informally. "Asking the R.I.B.A. to ask the Minister to order . . ." is usually quite impracticable. On the few occasions that a word comes from the great ones it does as much harm as good for the lesser ones resent interference in their local kingdom.

The Allied Societies overseas are of a different stature in fact if not in constitution as written in the R.I.B.A. bye-laws. They are more truly independent and stand on their own feet. Some of them administer the registration ordinances in force in the country. Yet they still look to the R.I.B.A. as the central co-ordinating body on matters of broad policy.

It would not be such a bad thing if the societies in the United Kingdom remembered more often the international status of the R.I.B.A. and looked upon it less as the curator of the British Isles.

EVENTS AND COMMENTS

THE A.B.S. BALL

According to the *Evening Standard* this mammoth party was attended by over a thousand architects. I believe in fact that the total number of *persons* attending was about a thousand and thirty. My guess is that there were about three hundred architects present making with their partners about six hundred architectural souls. The remainder being contractors and subcontractors. Many of the architects were at contractors tables, you could tell that by the distribution of Magnums and even Jeroboams of champagne. The truly architectural tables being decorated with half bottles from the best distinguished vineyards and breweries.

Judged as a money raiser the Ball must have been a terrific success; one well-known stall-holder told me that he had taken over ninety pounds. An unwanted cooked sucking pig which had already earned more than its keep in a raffle was sold by auction and fetched a further twenty pounds. A thick, glossy programme contained advertisements from nearly all the best firms and must have brought in quite a lot of money.

As a dance the function had none of the terpsichorean elegance of the Hammersmith Palais. In slow time it was a jam-packed shuffle and in quick a hurly-burly where pinching, elbowing and shin hacking were all part of the fun. The band played with spirit and when there was room the younger guests cut capers, rugs and the older members with carefree abandon. It is a true sign of the times that the only thing temporarily lost or found was a diamond watch.

As a display of fashion and beauty the ball was well up to standard. Skirts were to be seen of all lengths from a trifle short to very much too long and waists were all over the place. The men were as usual a pretty shabby lot and far too many were in dinner jackets. I saw one smart gent with a velvet collar and another in most splendid whiskers. The remainder formed a rusty, dusty, black background for their, happily, very much brighter partners.

The organisers did their job very well and the proof that they did will no doubt be found in the balance sheet. All the same it seemed to be taking things a little too far when the first thing one saw on arriving was a notice saying that the *1956* A.B.S. Ball would be held in the same room on Wednesday, December 12. Although the A.B.S. has many voluntary helpers, some of whom are quite terrifyingly zealous, their work would be of comparatively little value without the backing of the permanent secretary Miss Solly. Charming and always cheerful Miss Solly is so much a part of the A.B.S.-A.R.C.U.K.-R.I.B.A. set up that those who know her tend to forget that there are others who do not. I suggest that any architect who does *not* know Miss Solly should call on her the next time he is in or near Portland Place, leaving a contribution to the A.B.S. with her to mark the occasion.

Speaking at the Building Exhibition's A.B.S. lunch recently Mr. Aslin, the president (to the power of three), remarked on the queer fact that if asked point blank in the street man will always part with a 10s. note while he seldom replies if asked by post. Ten shillings a head from all the architects would make the A.B.S. very happy. Have *you* a clear conscience ?

ARCHITECTS HOMES COMPETITION

You have already seen the preliminary notice of the postponed A.B.S. competition for 20 homes for old architects. The more serious entrants for this competition will certainly begin by re-reading Trollope's novel "The Warden". I have not seen the conditions but I am given to understand that some pretty clear directions are given as to the type of architecture which is wanted. A good centre of the road up-to-date English cottage style would no doubt be acceptable to—or even demanded by—aged architects of the moment but what of the future? Surely it would be a wise precaution to design framed structures each with a number of different external wall treatments, so that when the time comes the leader of any particular architectural style fallen on evil times, frail and ageing, can retire to a haven of rest discreetly, yet unmistakably reminiscent of his palmier days.

This or something very similar seem to me to be quite essential if true charity is to be done. Apartheid, Danegeld, the Poll Tax and the Com. Laws hold or held no hardship comparable to forcing some architects to end their days in an aesthetically incompatible building.

Please do not let these considerations deter you from

having a bash at this interesting competition. After all you never know it may be your one chance of getting your dream home.

NEW H.Q. FOR S.A. ARCHITECTS

Overleaf is a perspective of the winning design by Charney & Margoles for the H.Q. of the Institute of South African Architects. Fifty-nine designs were submitted. In their report the assessors, Messrs. J. N. Cowin, N. L. Hanson and E. Douglas Andrews point out that the problem was a difficult one because administrative and club accommodation had to be provided in more or less self-contained areas; the administrative area being sub-divided to accommodate both architects and town-planners. The maximum permissible cost and site limitations added further difficulties.

The assessors liked the winning design for its simplicity, economy, ease in circulation and use of levels. In detail, however, they found some of the planning disappointing. For example they criticise the placing of the caretakers flat over the main room. They consider the Council suite and Board room inadequate in height and they do not much like the proportions, lighting and ventilation of the Main Room.

On the question of cost the assessors praise the realism shown throughout the scheme and although they do not consider that they can altogether accept the competitors' figures they think that the scheme is as likely as most to come within the stipulated cost.

It is interesting to note that the cubing rates for the winning designs were as follows:—

Garages, stores, foundations ...	2s. 6d.
Ground and first floors	4s. 6d.
Roof buildings	3s. 6d.

The total estimated cost was just under £30,000.

In their report the winners make a point of the ease of access to various different sections from the street. The split level arrangements help to provide this. In general the construction is an R.C. frame. Over the Main Room the slab is of hollow blocks 21in deep, thus eliminating visible beams. The external finishes are of white and grey pre-cast terrazzo slabs with black granite plinth, bronze doors, frames and lettering and white terrazzo grille and sunbreakers.

It is interesting to note that while we are now gradually denied assessors' reports in this country, they are still very much the fashion elsewhere. It seems to me that an assessor does only half of his job if he fails to make known his reasons for selecting the prize-winning designs.

THE PRESERVATION OF HISTORIC BUILDINGS

Usually when we attend exhibition openings at the R.I.B.A. it is with a slight sense of guilt. We feel that perhaps we should not after all have taken time off to hear this or that ambassador, these or those foreign architects. We could very well—indeed much better—see the exhibitions on another day. Then we realise that if we did not go to the opening ceremonies, bidden by a card from the R.I.B.A., we would very probably never go at all. Often it would not greatly matter, excellent though many of the exhibitions are.

The present exhibition, illustrating the work of the Ancient Monuments Branch of the M.o.W., is both interesting and important. Interesting because it shows how the very large job of preserving the 600 odd historic buildings in the Ministry's care is done and important because the methods employed are the results of 40 years' experience and can of course be applied to the many thousands of other historic buildings required to be maintained by other bodies and individuals.

The very good photographs and text of the exhibition are supported by models, actual pieces of material and a first-rate but cheaply produced handbook. The exhibition includes sections on masonry, brickwork, timber, plasterwork, structural problems, and ironwork.

Opening the exhibition in a blinking blaze of B.B.C. television newsreel camera lights, Mr. Nigel Birch of the M.o.W., spoke feelingly of the ravages of dry-rot. The Ministry, it seems, also has its estimates upset by that painful and almost universal complaint merulius lacrymans.

I understand that this exhibition is to go on tour but do not wait for it to turn up. Go and see it at the R.I.B.A. and while you are there call on Miss Solly of the A.B.S. (see above).

DRAWING OFFICE TECHNIQUE

Elsewhere in this issue you will find details of an evening symposium on how to produce various types of drawing in the office. Short papers will be read by four architects and the discussion will be opened by a contractor. This is one of the R.I.B.A. Science Committee's better ideas. Drawings of the types to be discussed will be exhibited and Peter Shepheard will be in the chair.

I noticed in the Tretol exhibition that an above average number of entries were drawn in a way most suitable for reproduction. A selection of them is on view at the Building Centre until 22 December.

ABNER

Correspondence

Dear Sir,—It is encouraging to witness the advent of refreshing, well-mannered and often exciting design in Espresso Coffee Bars. At the beginning of the present rash we were treated to some rather unfortunate interiors. Interiors that seemed intent on using all the contents of an up-ended barrel of tricks applied *ad lib* and *ad nauseum*.

The present stage of the Espresso "growth" is being injected with the essence of architectural quality in the hands of some extremely capable designers. Their handling of space, materials and colours together with an instinct for the carefully balanced and well-integrated whole is indeed an important contribution.

There is one unfortunate basic factor which I find

distressing and that is the design of the Espresso Coffee machines themselves. These are very nearly without exception in the "juke box" tradition and tend to be the vulgar discordant element in some of these excellent interiors.

Perhaps if the Espresso craze grows exceedingly large, we shall find an English offshoot machine in a more clean-cut sensible design to challenge the Gaggia near monopoly and their maintenance service which I understand is exceedingly good.

Although the Continental influence in the design of Espresso Coffee Bars is very great at the moment in London, which, indeed, is very appropriate considering how cosmopolitan the metropolis is, it may well be that an English idiom will be evolved. The provinces in taking the Espresso Coffee Bars to their hearts might produce this influence.

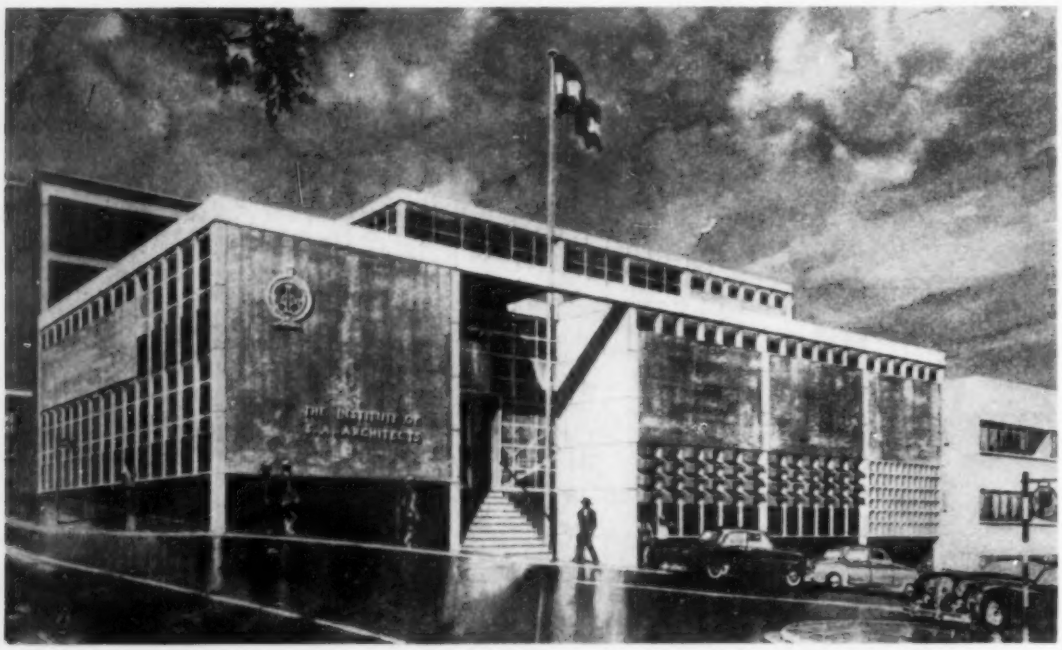
I am not particularly hopeful of the Espresso Coffee Bar becoming a serious rival to the public house nor, indeed, particularly desirous. I do not see them capturing the essentially chummy atmosphere. They also are of course at a disadvantage on the type of brew distributed.

They have however got off to a better start than the Milk Bars with their ice-cream parlour architecture. One of the interesting factors which is contributing to the demand for individual design is that they are mostly individually owned rather than company owned as in the case of so many of our public houses. In the public houses there is a tendency for the pattern to be repeated throughout the chain.

I await with interest the further development of the Espresso craze which is providing a good opportunity for jostling the public with contemporary progressive ideas even though in a restricted manner.

Yours faithfully,

W. HOME.



Perspective of the winning design by Messrs. Charney and Margoles. The plans are shown on the facing page

Institute of South African Architects Competition for H.Q.

In the competition for the design of a Building for the Institute of South African Architects, limited to members of that Institute, the Assessors, Messrs. J. N. Cowin, N. L. Hanson, and E. Douglas Andrews, A./A.R.I.B.A., M./M.I.A., have made the following awards:

1st Premium of £200:
Messrs. Charney & Margoles.

2nd Premium of £150: Philip Karp.

3rd Premium of £50:
Messrs. Hadden & Allen.

The Promoters were the Central Council of the Institute of South African Architects, whose first Congress was held in 1928. The site of the proposed headquarters is on the corner of Biccard and Hoofd Streets, Johannesburg. Fifty-nine entries were received. The winning design is reproduced from the October number of *The South African Record*.

The Assessors, in their report, made the following observations:—

In spite of its limited scope, the programme presented considerable difficulties. The conclusion of both club facilities and office administration (itself sub-divided) within a framework severely limited by cost and site, challenged the ingenuity and resourcefulness of competitors. It is not surprising, therefore, that a solution meeting every requirement ideally was not easily found. The programme was deliberately framed to allow a wide freedom of interpretation by competitors and to encourage the formulation by them of their own ideas in the compact arrangement and multiple use of the accommodation. In the event, few have succeeded in reducing the complexities of the

programme to a straightforward workable arrangement, and none has achieved a completely satisfactory all-round solution in architectural terms.

Basically, the problem set was the clear division of the club function of the building from the administrative, while maintaining a working relationship between both functions. In addition, the cost factor necessitated an overlap in the services to be provided for the building as a whole. Further, it was desirable, if it was possible to do so, to maintain a degree of separation between the offices provided for the Central Council and those of the T.P.I. and Chapter. Equally desirable was the provision of ready means of access to the offices of the latter two bodies. Economy in the administration of the building as a whole seemed to point almost inevitably to the placing of these offices adjacent to the entrance of the building. Lastly, the use of the club and meeting facilities by members was to be encouraged by correct location and easy direct access.

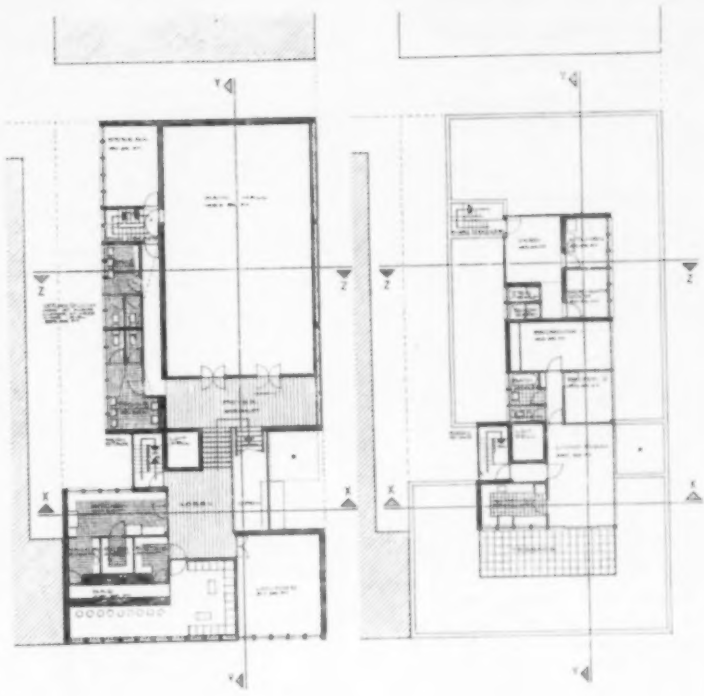
It was in the light of these considerations that the Assessors judged the schemes submitted. While many schemes embodied attractive features in one respect or another, a satisfactory basic plan arrangement achieving the demands outlined above was, in the final analysis, the primary requirement. In general, competitors ran into difficulty in balancing the material factor of convenience against the demands, important but intangible, of the overall design. It may well be that the programme postulated unusual difficulties; nevertheless the three premiated designs have succeeded in varying degrees in reconciling within the framework of compact planning its inherent complexities.

The Winning Design

The Assessors comment as follows on the winning design:

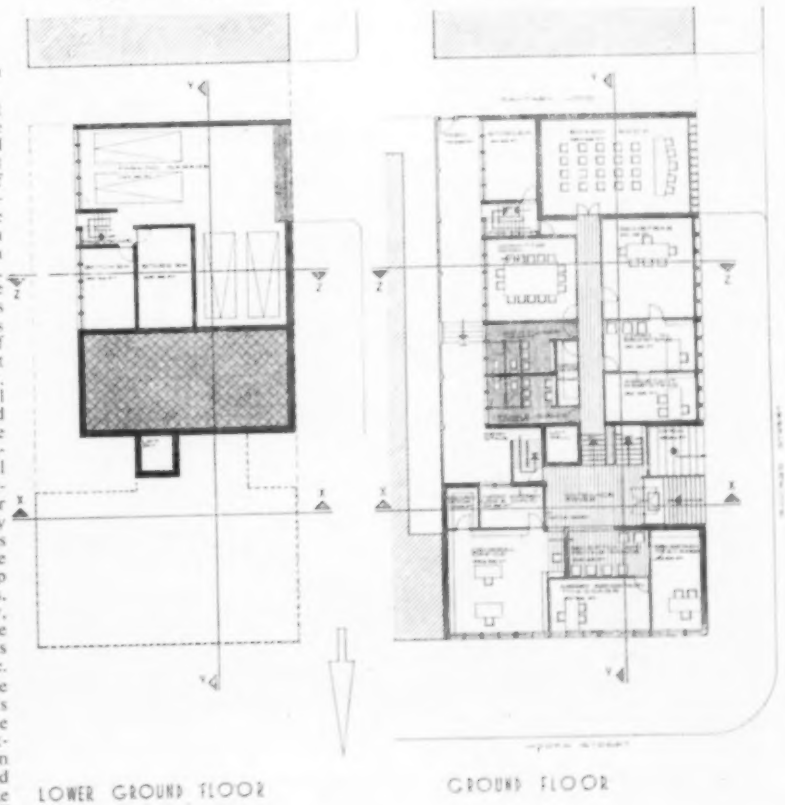
"This scheme is notable for the fact that its author, in facing up to the realities of the programme, has evolved a remarkably simple, an almost "inevitable" solution. In the handling of the main elements of the plan, in economy or circulation, and in effective use of the levels of the site, the solution offered is outstanding, and taken as a whole, well ahead of all other schemes. The use of half levels, though not unique in the competition, has nevertheless achieved the principal planning objectives of the programme with a minimum of complication and with the directness that is refreshing. Thus the grouping together, in the northern wing, of the General Office and the offices of the T.P.I. and Chapter (adjoining and overlooking the Entrance Foyer) gives effective separation from the offices of the Central Council, while maintaining essential contact. The half flight down to the latter suite and to the cloak rooms is a fully acceptable arrangement. The pattern is completed by the half flight up to the Main Room, with a further half flight up to the remainder of the club facilities, well placed in the northern wing. Clearly, in this plan, the lack of a lift in the building will prove no drawback to its proper functioning now or in the future.

Its good qualities notwithstanding, the scheme has yet not fully realised its potentialities. The detail planning, while showing deft touches, is often disappointing. Many practical issues are far from fully resolved, and modification and changes will have to be made before the scheme may be considered practicable."



FIRST FLOOR

SECOND FLOOR



LOWER GROUND FLOOR

GROUND FLOOR

Evening Symposium on Drawing Office Technique

An Exhibition of the different types of drawings used by Architects today and a discussion on the best means of producing them.

The discussion, organized by the R.I.B.A. Science Committee, will take the form of a symposium and is to be held on Tuesday, January 17, 1956, at 6 p.m.

Five Architects have been invited to describe any special procedures in their offices to produce, with the minimum of effort, clear and comprehensive drawings for all purposes from the first commissioning of a project to its completion.

It has been suggested to the speakers that the problem should be treated under the two main headings — *Project Drawings* and *Production Drawings* and that they should describe any special procedures in use in their own Drawing Office.

The meeting will be thrown open for general discussion after the Papers have been presented, and it is hoped that Architects, Contractors, Engineers and other users of architectural drawings will attend the Meeting and take part in the discussion.

An exhibition of drawings contributed by several invited Architectural Offices, including those of the speakers will be on display concurrently with the symposium and will remain open for viewing throughout the week commencing January 16, 1956, at 66, Portland Place.

Each contributor to the exhibition has been asked to exhibit samples of the drawings produced for a single complete project and to indicate the total number of drawings used of each type shown.

The organizers feel that in a period of changing conditions and methods when much attention is being given to productivity throughout the Building Industry it is important that Drawing Office technique should keep pace with thought in design, administration and construction. It is hoped that the symposium will provide a useful opportunity to review Architects' drawings and the way that they are produced, and to compare the methods by which the problem outlined above has been approached and and surmounted by different types of offices.

The following will take part in the Symposium:—

Chairman: Peter Shepheard. *Speakers*: A. W. Cleeve Barr; Henry Elder, M.B.E.; Richard Sheppard; Gordon Tait.

The speakers will contribute to the exhibition of drawings either as individuals or as representatives of an architectural office, and the following have also been invited to supply drawings:—

The Hertfordshire County Council; Messrs. Tayler and Green; D. H. McMorran, A.R.A.; Sir Thomas Bennett, K.B.E., F. R. S. Yorke.

The discussion will be opened by P. Trench, O.B.E., T.D.

L.C.C. Architect in Canada

Mr. A. W. Cleeve Barr, A.R.I.B.A., Senior Architect in charge of the L.C.C. Architects' Research and Development Department, is on a visit to Canada as the guest of the British Columbia Lumber Manufacturers' Association. Vancouver. The purpose of the visit is to ascertain how far Canadian methods of timber frame construction are applicable to building practice in this country.

COMING EVENTS

Royal Institute of British Architects

December 19 at 6 p.m. Library Group Meeting. The evening will be devoted to a talk by W. A. Eden, F.R.I.B.A., on "Vitruvius on Public Architecture," at 66 Portland Place, W.1.

The Association of Supervising Electrical Engineers

December 20 at 6.30 p.m. "The Heat Pump with reference to Domestic Installations," by G. Peter Watson, A.M.I.E.E. (Ferranti Ltd.), at the Lighting Service Bureau, Savoy Hill, W.C.2.

ANNOUNCEMENT

R. T. Kennedy, C.B.E., A.R.I.B.A., M.T.P.I., has left the Ministry of Housing and Local Government to commence private practice at 14 Harley Street, W1, (Tel. No. MUSeum 0383) in association with William Holford and Partners.

CORRECTIONS

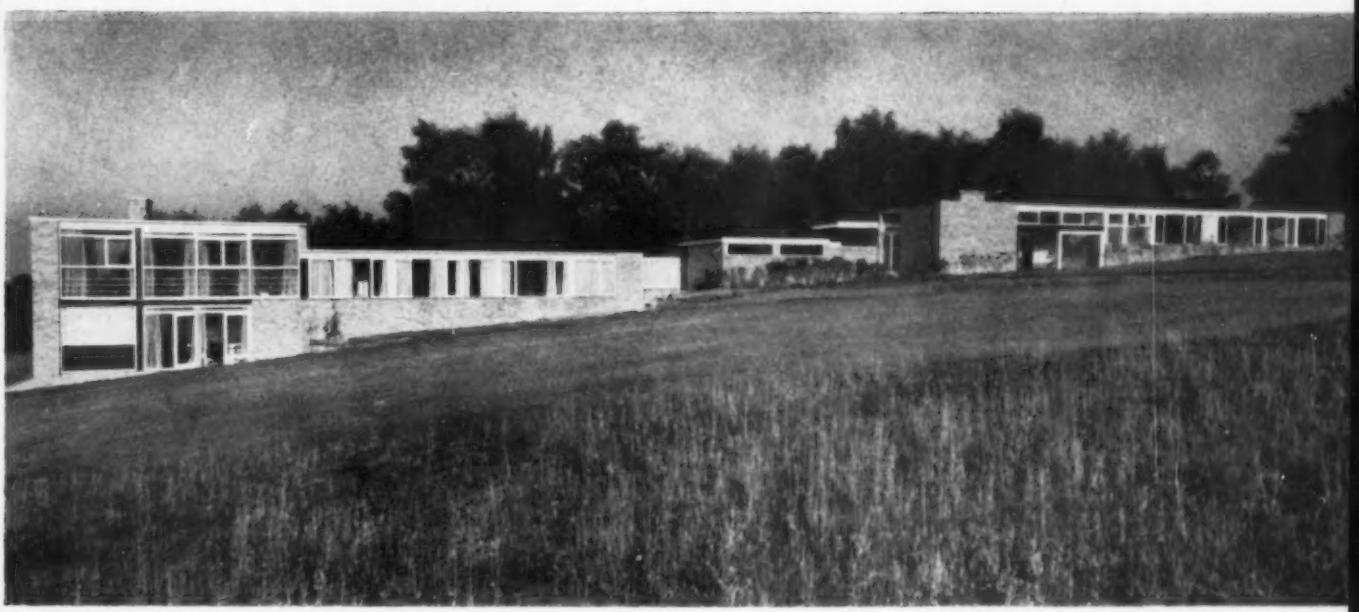
In his article on the Building Exhibition, Mr. David Jenkin referred to "Kynalok" Secret-Fix Cladding, and said that the roofing version was called "Kynal." We are informed that this is not correct, as the word "Kynalok" is used for this type of cladding whether employed for roofs or walls. All "Kynalok" Cladding is made from "Kynal" aluminium alloys made by the I.C.I.'s Metal Division.

The Tretol design ascribed to "John Birchell" was in fact by John Bicknell, A.A.Dip.(Hons.), A.R.I.B.A.

ADDENDUM

The two Assistant Architects to Bridgwater & Shepheard who worked on the St. Martin's Bank, illustrated in last week's issue, were Gordon Michell and G. E. West. The following suppliers are additional to those already mentioned in the article: Sanitary fittings, Adamsez Ltd.; supply of all special timber and veneers, Messrs. Mallinsons; suspended ceilings, G. Jackson & Sons Ltd.; venetian blinds, Deans Blinds Ltd.; windows, Henry Hope & Sons Ltd.

Tomorrow H.M. The Queen is to open London Airport Terminal; architect, Frederick Gibberd; Consulting Engineers, Sir William Halcrow & Partners. The Director-General of Works, Air Ministry, was responsible for Construction. The picture shows the S-E Face Passenger Handling Building.

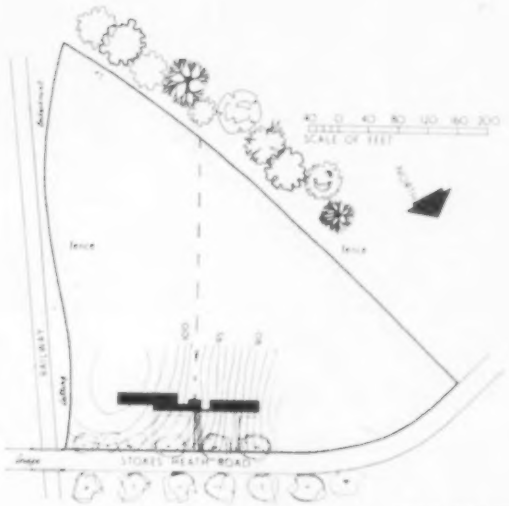


From Southwest

Two Houses at Oxshott Surrey

architects: POWELL & MOYA

THE site is triangular and about 4 acres in area. It is served by a private road on the North, bordered by a row of trees. Beyond the South boundary is a dense wood. A railway line runs in a deep cutting along the East boundary, although this cutting becomes an embankment at the far South West corner. The site slopes down quite steeply from East to West along the road frontage. There are fine distant views to the North and West. Other new houses have been built along the road on each side of the site but they are not very prominent and detract little from the pleasant meadow-like quality of the site.



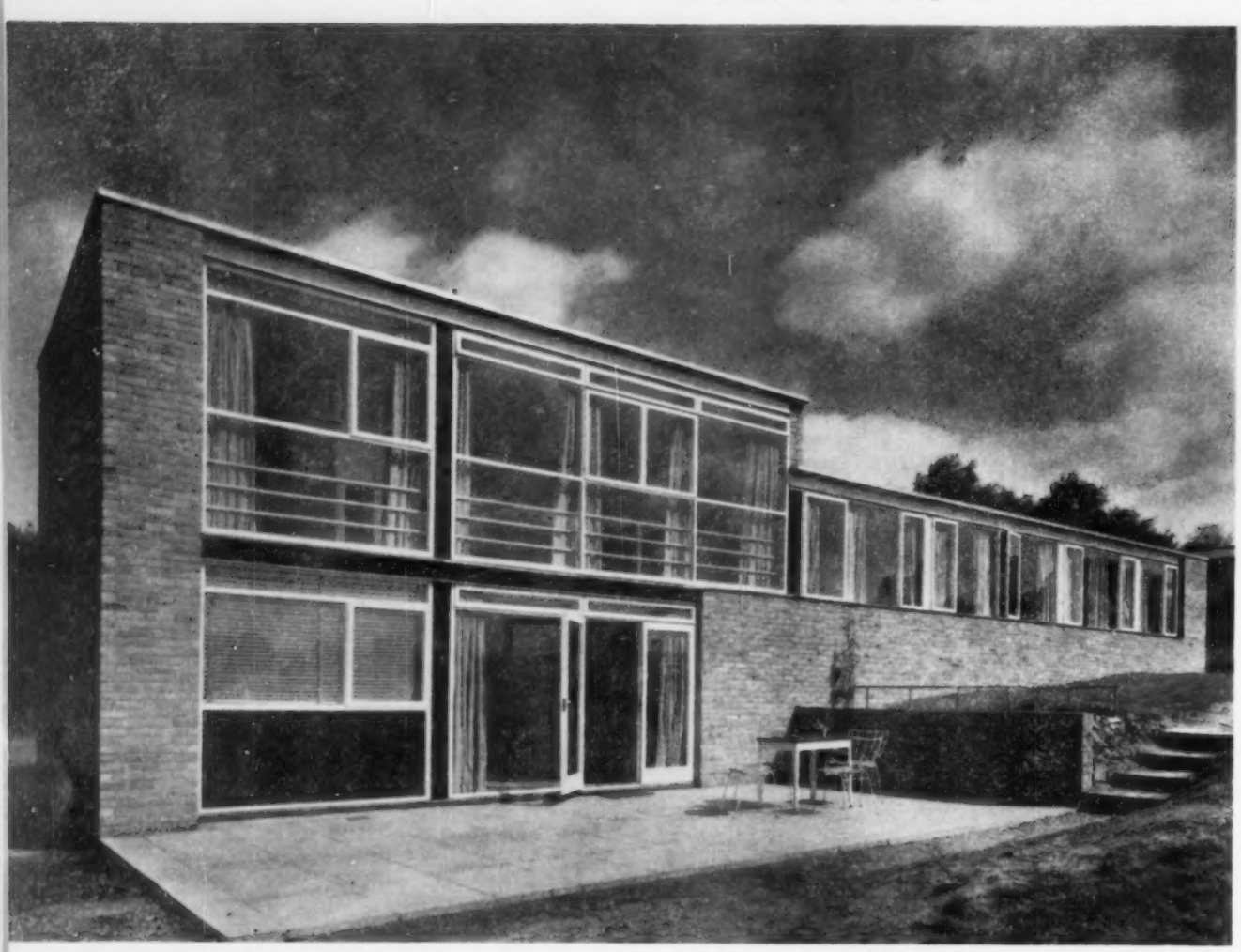
SITE PLAN

Requirements

Both houses had to be designed to comply with the restrictions in floor area which existed at the time and to a very modest budget. Apart from the normal Local Authority approval, the Commissioners for Crown Lands' approval was also necessary. House No. 1 is on the higher part of the site and is occupied by a married couple with three small children. The owner of this house wanted a bungalow. House No. 2 is on the lower part of the site and is occupied by a married couple with one small child. The owner of this house wanted at any rate part of his house on two floors, as an upper floor on the lower portion of the site would enjoy exceptionally good views.

Design

The houses are long and thin and are built along the road frontage so that all living-rooms and bedrooms enjoy the sun and the views to the South and are placed in such a way as to see and hear as little of the railway as possible. This siting has involved building against the



The south front of house No. 2

Two Houses at Oxshott

contours of the site—the slope in the length of house No. 1 is 6ft and of house No. 2 is 9ft. To conform with the character of the site and to cut costs, the houses have been linked together and "terraced" down the site. In house No. 2 where the slopes are greater, the client's preference for a two-storey living wing has allowed the natural and economical answer to the siting problems. In house No. 1 the gentler slope is exploited by dropping the floor level of the living-room to give it greater height than the rest of the rooms.

Areas and Costs

House No. 1—Area of house 1,417 sq ft. Area of store and garage 223 sq ft. Final cost £4,001. House No. 2—Area of house and store 1,422 sq ft. Area of garage 122 sq ft. Final cost £3,803.

Construction and Finishes

External Walls: cavity construction, external leaf 4½in London Stock Facings, internal leaf 4in clinker blocks. Internal bearing walls: 4½in brick.

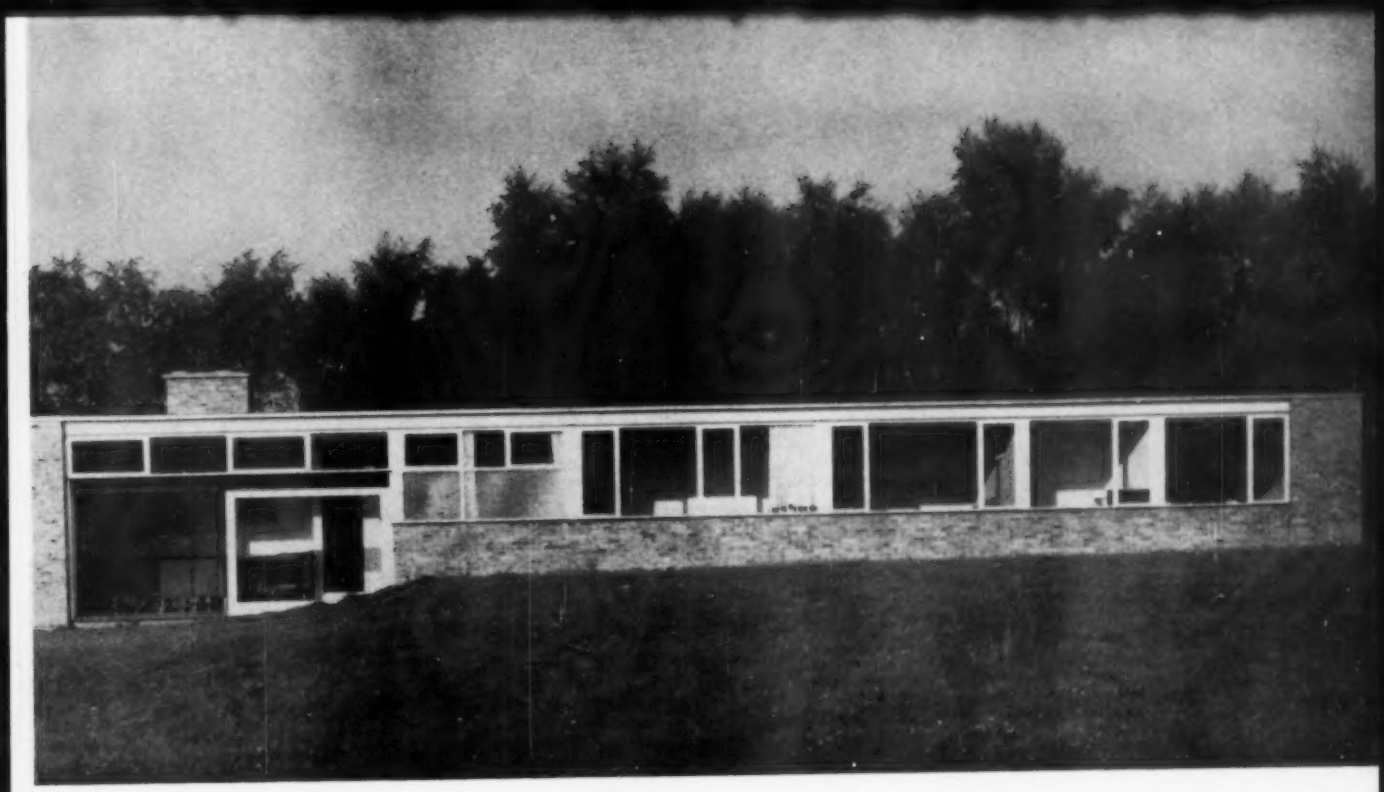
Ground floor: 1in concrete screed on damp proof membrane on 4in concrete on hardcore. Intermediate floor of house No. 2: normal timber joist construction.

Roofs: "Stahlton" pre-stressed hollow pot construction, insulated on top with 1in cork and water-proofed with patent 3-ply roofing felt (laid without falls) and with a finish of grey granite chippings. Fascias are fair-faced *in situ* concrete with aluminium flashings. The garage roofs are of timber joist construction and are finished on top with boarding and 2-ply bituminous felt.

Windows: soft wood (Ejma type opening lights) with hard wood cills. The sliding window in the living-room of house No. 1 is of hard wood and is glazed with double plate glass.

Non-structural walls: "Highworth" partitions con-

Continued on p. 774

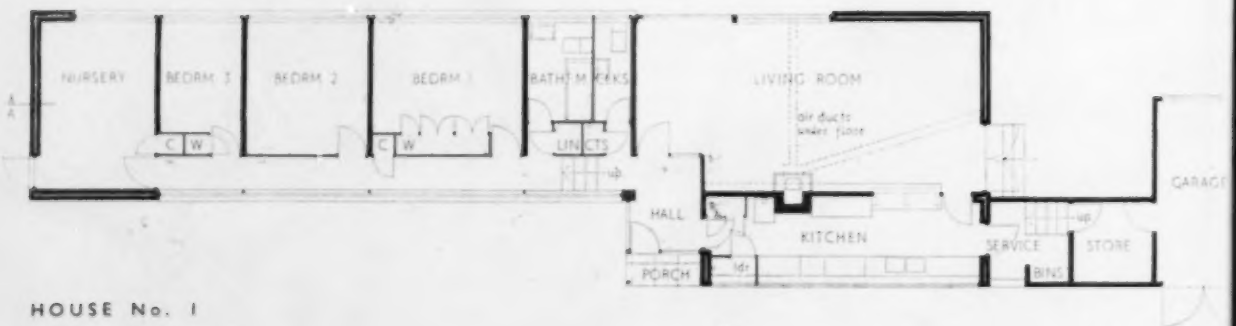


South front, house No. 1

Living room terrace, house No. 1

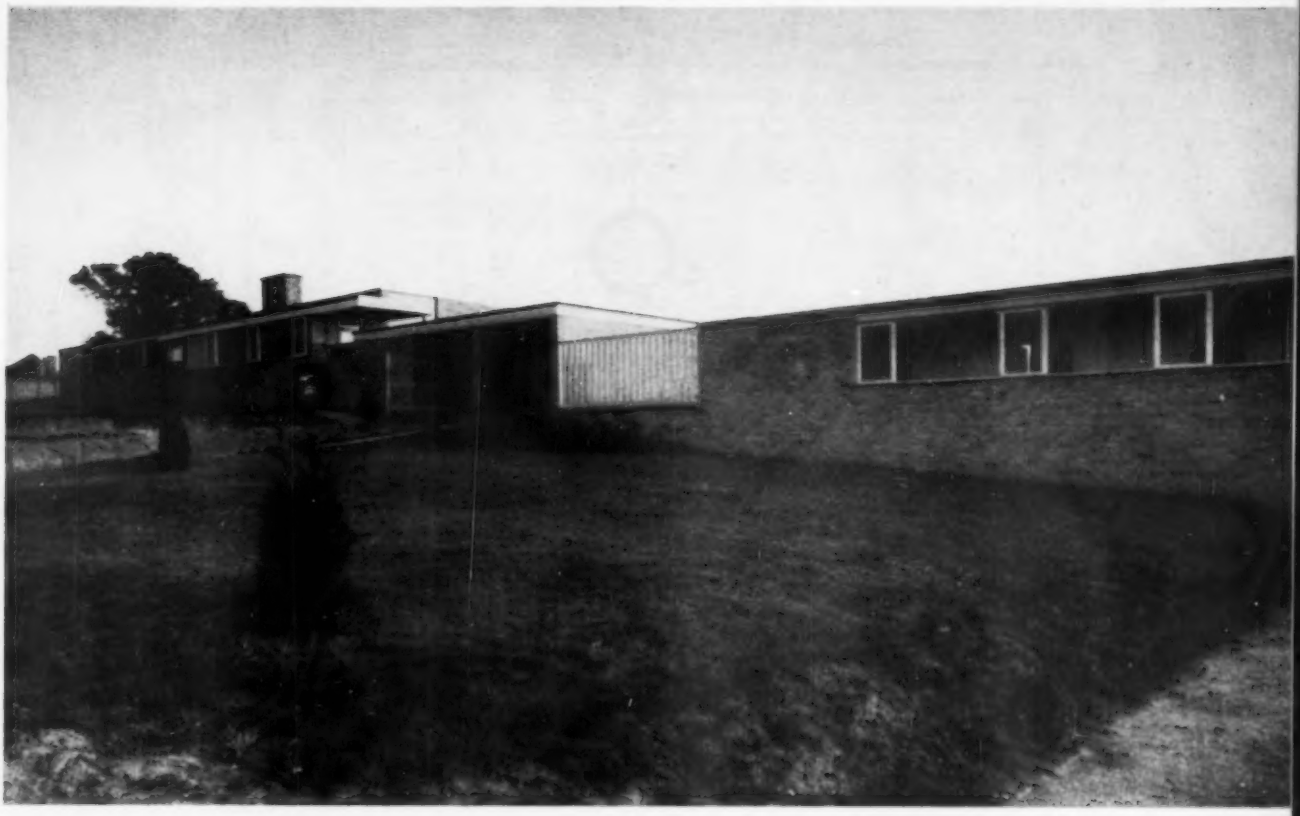
House No. 1. Entrance front

PLAN & SECTION A.A.

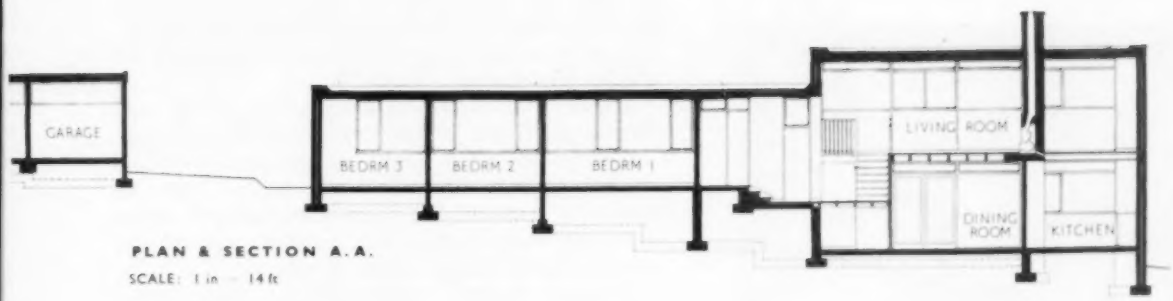


HOUSE No. 1

Two Houses at Oxshott

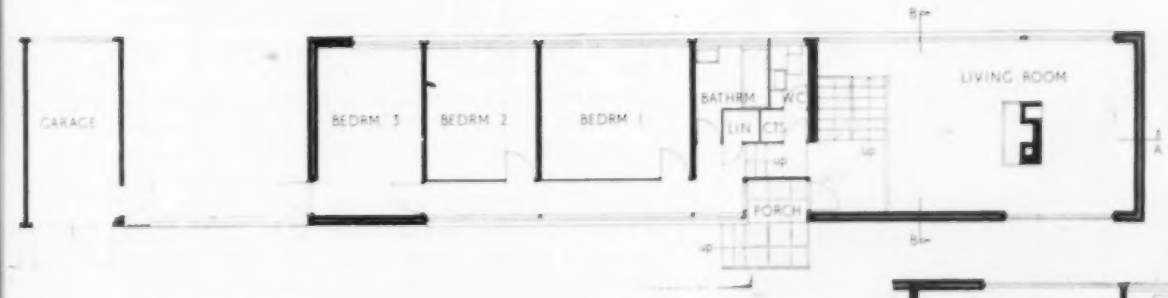


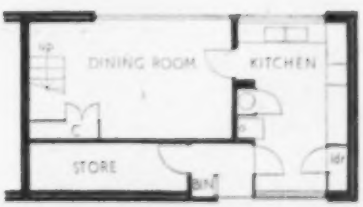
House No. 1 and part of house No. 2



PLAN & SECTION A.A.

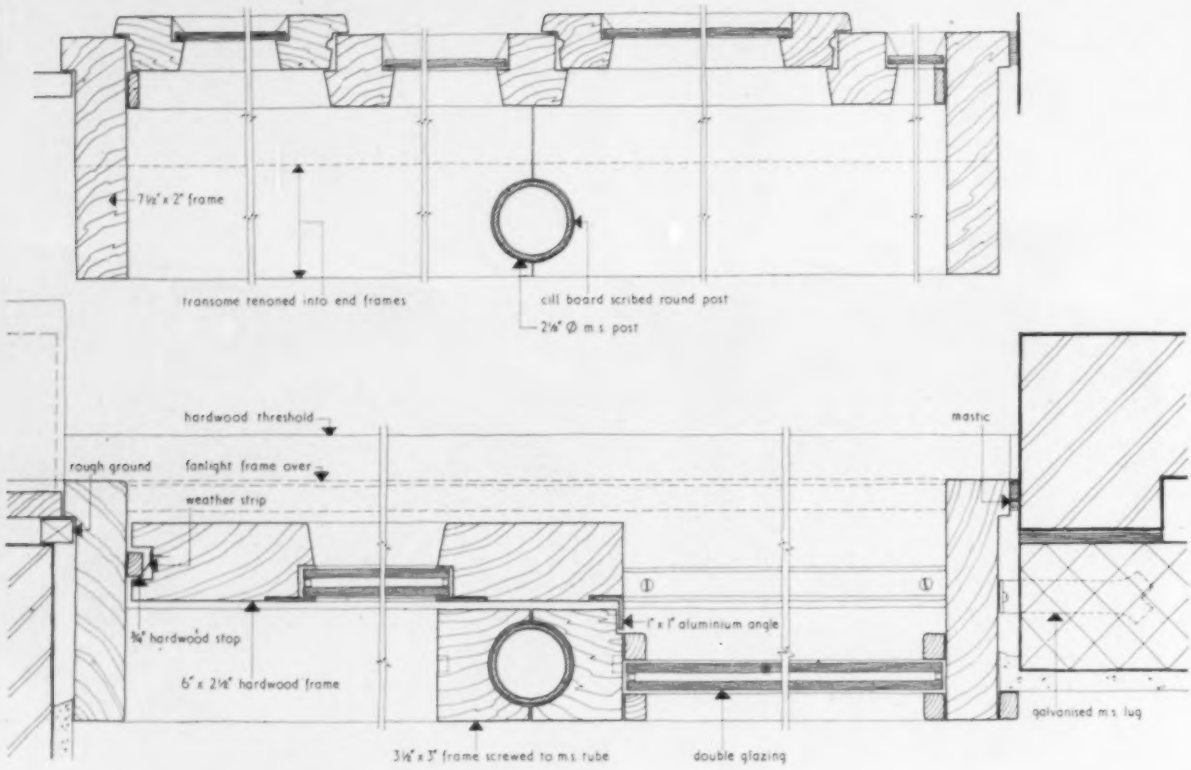
SCALE: 1 in — 14 ft





HOUSE No. 2

Plans above and below transome. 1/5th F.S.



Two Houses at Oxshott

Continued from p. 770

Kitchen. House No. 1

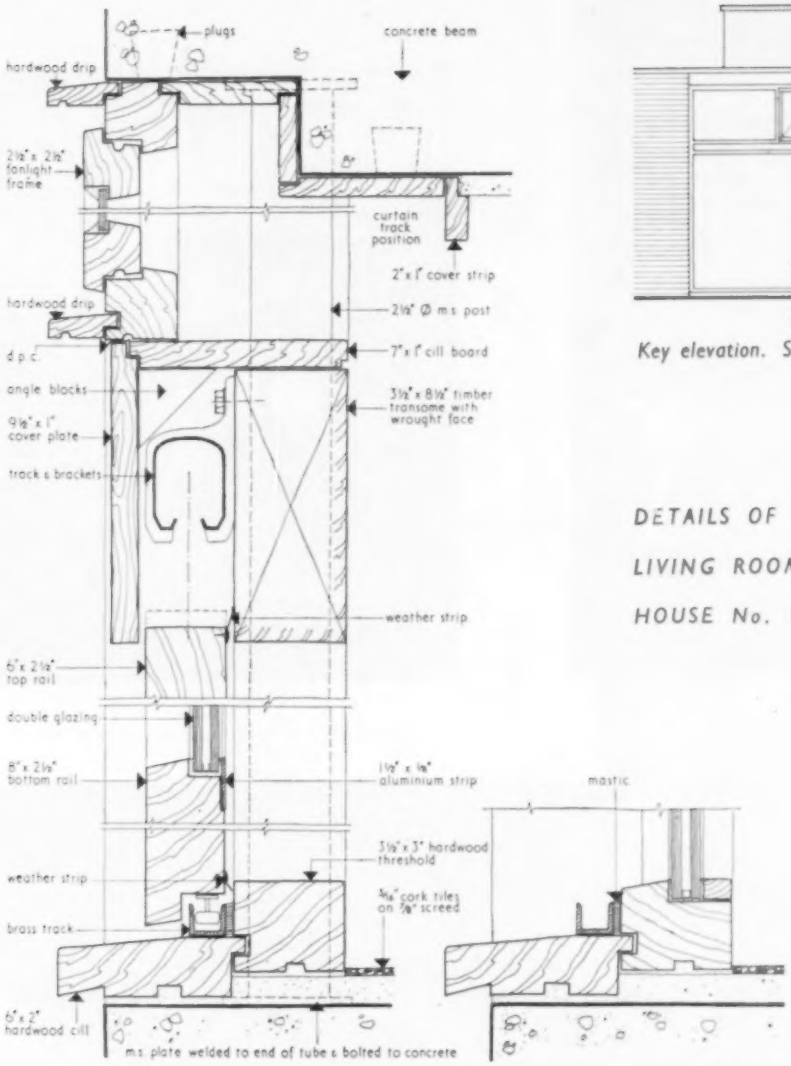
sisting of a core of ⅜in plasterboard with stretched galvanised wires both sides which act as reinforcement for the ⅜in plaster skins.

Internal Finishes: Floors are finished generally with thermo-plastic tiles or linoleum, except for the living-room of house No. 1, which has cork tiles. Walls and ceilings generally are plaster and finished with distemper or emulsion. The fireplace walls are of unplastered brickwork finished with emulsion. Internal cills are of a slate-coloured precast concrete.

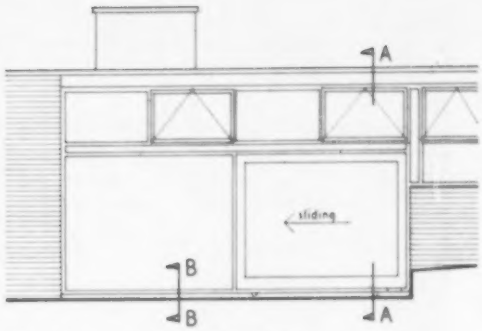
External Colours: Yellow London Stock bricks. Paintwork generally black and white. The kitchen porch soffit of house No. 1 and the front door porch soffit of house No. 2 are bright red. Internal Colours: predominently white. The bedroom corridor ceiling of house No. 1 is matt black.

Services: The plumbing is all internal, including the rain-water drainage. Water heating is by an "Agamatic" boiler, which also feeds radiators in the living-room wings of each house. Electric cookers are used. The electrical installation uses ring main circuits with 13-amp "domestic sockets" fused plugs. Light fittings are on a separate 5-amp circuit. The light fittings in the living-room of house No. 1 were designed by Bernard Schottlander.

pictures p. 776

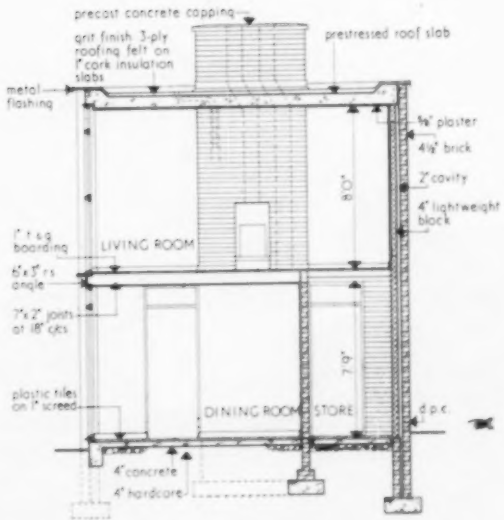


Section A-A. Section B-B. Scale: 1/5th F.S.



Key elevation. Scale: 1in = 8ft

DETAILS OF LIVING ROOM WINDOWS HOUSE No. 1



SECTION B-B. SCALE: 1 IN = 8 FT. SEE PLANS

General contractors: Thorogood & Sons Ltd.

Sub-contractors:

Cork Tile Flooring: Armstrong Cork Co. *Double Glazing in Living room of House No. 1*: Pilkingtons "Insulite" fixed by Aygee Ltd. *Electrical Installation*: E. W. Nerridew & Sons. *Hook Nails for Partitions*: Highworth Processes Ltd. *Internal Pre-cast Cills*: Mackenzie Brytiles Ltd. *Ironmongery*: A. G. Roberts Ltd. *Kitchen fittings*: Bayanbee Joinery Ltd. *Linoleum*: Catesby's Ltd. *London Stock Facings*: Cement Marketing Co. Ltd. *Radiators*: Steel Radiators Ltd. *Roof Waterproofing*: William Briggs & Sons Ltd. *Sanitary Fittings*: Stitsons Sanitary Fittings Ltd. *'Stahlton' Roofing*: Costain Concrete Co. *Thermo-Plastic Tiles*: Marley Tile Co. *Terrazzo Shelves and Hearths*: Simpsons & Sons Ltd.

Two Houses at Oxshott

Views of the living room, house No. 1

Electrical Space Heating Appliances 1

The next article on this subject will appear in February 1956.

Domestic Electric Heating

by J. I. BERNARD

Chief Technical Officer to the British Electrical Development Association

THERE has never been any doubt about the efficiency of electric heating; moreover those who have tried it find that the cost in practice is not as high as some people led them to expect, especially nowadays when the cost of current shows a very moderate increase in comparison with the rise in price of all kinds of fuel.

However efficient electricity may be, there is sometimes a doubt as to its effectiveness in providing the kind of warmth and comfort required. Electric heating often signifies nothing more than one or two portable electric fires; the wide variety of electric heating equipment is not sufficiently well known nor is the fact that the price of appliances compares favourably with a conventional system of central heating, even allowing for purchase tax, which, incidentally, the Beaver Report (Cmd 9322, para. 72) recommended should be removed in the interest of Clean Air. In consequence there is a great need for the architect to be able to specify the right kind of electric heating equipment to suit the comfort and taste of any prospective user and to know how it can best be installed to give the greatest amount of convenience and satisfaction in every day use.

Trends in Domestic Heating Practice

The days when the acme of domestic comfort consisted of a blazing log fire or large lumps of coal in a well-grate which could be poked into a roaring fire to counteract a disagreeable draught drawn up the chimney have passed, because the fuel is no longer available, but the traditional love of an open fire dies hard and most people still like to see a bright radiant source of heat in some sort of fireplace setting which from a furnishing point of view also forms a centre of interest in a living room.

Screen heater No. 5420, Premier Electric Heaters

One of the most important features of heating by a fire is that most of the heat is given off as radiation and so the air temperature is appreciably lower than when heating by convection is employed as it is in a central heating system.

The important difference between the two principal methods of heat transfer, radiation and convection, should be clearly borne in mind when discussing domestic heating problems. In an office or other building where the heating is more or less continuous, the walls, floor and ceiling take up a temperature which is very little below the air temperature of say 65-68deg F required for comfort; in other words the mean temperature of the surroundings is practically the same as the air temperature. In most domestic premises, however, continuous heating is not required, it may in fact be disliked in certain parts of the house, for example, in

Domestic Electric Heating

bedrooms where many people prefer to sleep with a window open. In addition the ratio of external wall to the volume of the room is much greater in small domestic premises and the occupants are more closely surrounded by the walls than they are in a commercial or industrial building, with the result that there is a far greater sensation of chill from cold walls and windows in a house than any other kind of premises. Accordingly the main problem is to find the best remedy for this "cold radiation" so to speak, although this is actually a contradiction in terms since only heat is radiated; what happens is that the warm human body loses heat at an abnormally high rate in radiation to the cold walls.

Value of Radiant Heat

It has been found from a large number of physiological observations of occupants of rooms with various air temperatures and mean radiant temperatures that if a mean radiant temperature of say 50deg F is caused by cold walls and windows, the air temperature needs to be 75deg or higher in order to obtain anything like conditions of comfort. Even so the conditions are far from ideal, because the body is losing heat by radiation at an uncomfortable rate which is barely counterbalanced by the high air temperature. In regard to the best method of correcting this unbalanced condition consider first the possibility of improving matters by convection of air heating. Hot air will, of course, begin to raise the temperature of the walls but one has only to realise the small amount of heat air can hold to understand what a slow process this is in warming up brickwork having a weight of 1,000 times as great. An extreme example of this difficulty which may be a matter of personal experience is trying to create conditions of comfort in a small brick or concrete garage by means of an oil stove. The stove produces a current of very hot air and products of combustion but many hours must elapse before alleviation takes place in the feeling of chilliness due to the cold walls.

But there is fortunately an alternative which is very much more effective and that is to counteract the sense of chill by introducing a source of radiant warmth. An electric fire in an ordinary room will, for example, produce, within a few minutes of switching on, an output of radiant warmth which will go far to counteract the chilliness of the walls, and will thus avoid the need for an excessively high air temperature. This can be proved, if proof is necessary, by the results of scientific investigations by Bedford, Fishenden, Vernon and others, which show for example that a mean horizontal radiation of 75 B.Th.U. per sq ft per hour, raises the estimated mean temperature of the surroundings from 65 to 80deg F and this ensures an equal condition of comfort with an air temperature of only 55deg F instead of 65deg F. Such a reduction in air temperature explains why there is a much greater feeling of freshness with radiant heating than there is with convection or hot air heating, especially when the latter is accompanied, as it often is, by a considerable temperature gradient from floor to ceiling so that the air at head level is some 5deg F or more warmer than at floor level. Another feature of radiant heating is that the lower air temperature reduces the heat losses through the walls and by air change, which in turn reduces the running cost.

Intermittent v. Continuous Heating

The electric fire is not the only source of radiant warmth; equally good, if not better results, can be obtained by having heated panels or skirtings but to provide the same amount of heat they must have a much larger surface area because of their lower temperature and on account of the fundamental law of radiation which says that the output depends on the 4th power of the absolute temperature. The characteristics of different types of panel and other forms of "low temperature" electric heater will be described later since, for the moment, it is desirable to revert to the question of comfort and to point out that if a room or part of a house is left unheated in very cold weather the amount of radiant warmth necessary to overcome the low air temperature and cold walls may be more than the ordinary electric fire can provide. This leads to the idea of preventing the inside of the fabric from falling below a certain temperature level say 45deg F by some form of electric heating which, when operated under thermostatic control, will prevent the house from ever becoming too chilly. Incidentally, it may be noted that such a form of background heating operating at a constant temperature is different from that provided by a continuous burning stove which operates at a constant heat output irrespective of weather conditions.

Since there is no point in heating rooms when unoccupied, the relatively small amount of heat which is required to prevent the structure becoming too cold and the contents damp is all that need be provided if the object is to secure the greatest possible economy, it being understood that an electric fire will produce conditions of comfort in a very short time in any room that is going to be occupied. Automatic control can be provided, if necessary, by a time switch arranged to switch on an electric fire in a kitchen or breakfast room automatically some little time before it is wanted in a morning.

The flexibility of control and the precision of electric thermostats and time switches ensure the greatest possible economy—coupled, of course, with the ease with which electric heating can be switched off altogether when not wanted. Electric thermostats are inexpensive as well as accurate and reliable so that one can be fixed in each room together with a switch controlling the heating; in this way heat can be regulated to suit the requirements in individual rooms in a much simpler manner than turning off valves on hot water radiators.

Structural Insulation

The question of how much heat is required to prevent the various rooms in a house becoming too chilly depends very largely on the standard of thermal insulation to which the house is built. Electricity, being a high grade form of energy, should not be wasted, and when the saving in running cost over a reasonable life for the house is calculated, the increased capital cost of a well insulated house can easily be justified. This can readily be shown if, for example, the capital is to be borrowed on mortgage. Suppose that a 1,250 sq ft house is built with cavity walls using insulating blocks for the inner skin, an insulating quilt over the first floor ceiling and wood blocks over a solid concrete floor; the maximum heat loss will be almost half that of a similar house with solid 9in walls, suspended floor and no insulation in the roof (which until recently would have been regarded as quite a common form of construction). The saving in electricity for heating to the same degree of comfort (in practice some of this saving is usually spent on a higher standard of comfort) may be as much as 4,000 units a year, costing at 1d. almost £17, which at a mortgage rate of 5 per cent will justify an increased capital cost of £340; this will not only cover the extra cost of construction mentioned but would also pay for further insulation e.g. weather-stripping of external doors and the double glazing of one or more windows with a north aspect.

In any house in which the heating is more or less intermittent, and that means most houses, there is another thermal property of the structure which is of more importance than is generally recognised, namely the inner surfaces of the walls should have as little heat capacity as possible. The simplest description of this property is that wall surfaces should be warm to the touch. To give a practical illustration, a wood panelled room can be brought to any given condition of comfort more quickly than one with brick walls with a dense plaster finish; still better results from the point of view of quick warming up are experienced in rooms lined with insulating board but an appreciable benefit is obtained from vermiculite plaster covered with thick wallpaper.

Future Developments

There is no doubt that more attention will be given in the future to the heating of domestic premises in order that we may have houses which are kept warm easily, which can be left to themselves without becoming too chilly for reasonably comfortable re-occupation after an absence of a day or a week and in which one or more rooms can be quickly brought to a condition of comfort and then maintained in that condition without labour or supervision.

Electricity is destined to provide a clean and convenient heating service of this kind on an increasing scale as the need for cleaner air becomes better appreciated and as atomic energy is developed to supplement our limited fuel resources.

So, in looking to the future, two main objectives are bound to stand out more clearly, the first to build a house so that it will not only be warm as well as dry but also have really low heat losses, much lower than current practice. Secondly to instal some suitable background heating together with types of electric fires which are both attractive in appearance and effective in quickly producing conditions of comfort.

Firebar and Reflector Fires

As the majority of people in this country still prefer and are likely to continue to prefer, at least for the living room, some form of fire using the term to describe a luminous source of high temperature radiation, electric fires are the most important as well as the most popular type of electric heating appliance. The earliest forms of electric fire were of the firebar type, as they are called in the electrical industry. In these the heat is developed in a spiral of nickel-chromium alloy wire laid in grooves in the face of the bar of fireclay. Such a firebar rated at 1 kilowatt, i.e. using 1 unit an hour, may measure about 4in × 10in and one, two or three of them may be fitted in a suitable cast or sheet metal frame to make a complete fire. Heat is radiated not only from the red-hot spiral but also from the fireclay itself which attains a steady temperature after about a quarter of an hour from first switching on, and then acts as a high temperature radiant panel.

The smaller amount of radiation from the back of the fireclay slab goes to warm the interior of the fire which is generally hollow so a current of warm air rises through it and helps to heat the room by convection. The front face of the firebar may be straight or slightly curved in plan and mounted at a slight angle to the vertical so that the distribution of radiant heat is generally of the form indicated in Fig 1, and this, in conjunction with the convected heat, gives what is often termed a "fire that warms the whole room".

If this distribution of radiation would be inclined to scorch furniture in a small dining room, for example, another design should be selected in which the firebar

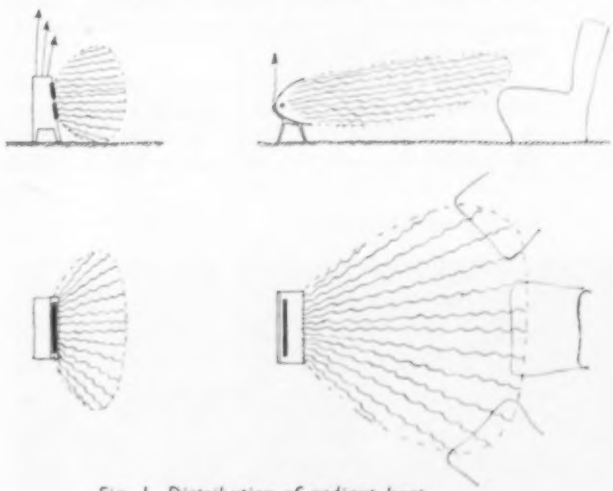


Fig. 1. Distribution of radiant heat.

Domestic Electric Heating

is sloping so that the heat is thrown more in an upward direction.

The other main type of electric fire is the so-called reflector type in which the heating wire is wound on a fireclay rod mounted in the focal point of a curved reflector, in order to concentrate the radiant heat mainly in one direction like the light from a lamp with a reflector behind it. The heat capacity of the rod is much less than that of the firebar so that a reflector fire reaches its steady temperature in a much shorter time, say 5 minutes or less and this, coupled with the heat concentration effect, accounts for the greater popularity of this type of fire.

The distribution of heat depends upon the shape of the reflector and there is considerable difference between the various designs available. If the element rod is of small diameter so as to approximate to a line source and the reflector is parabolic in section like a motor-car headlamp, the radiation will be confined to a flat beam as indicated in the vertical distribution in Fig 1 which shows that anyone sitting in an armchair will be bathed in radiant warmth from the feet to the chest (high temperature radiation on the face or head is not pleasant for any length of time). The horizontal distribution will depend upon whether the reflector is straight or curved but for a living room designs are available which will spread the warmth round the family circle as shewn in the diagram.

Inset Fires

A fire of this type built into a tiled surround is shown in Fig 2 and if the large chromium plated reflector is thought to have a cold appearance there is an alternative metal finish which is similar in colour to bright copper and which maintains its appearance even in dirty atmospheres without requiring much cleaning. When fixed in a fireplace, chimney ventilation can be effected if desired by narrow slots or louvres in the frame surounding the fire.

As to the electrical loading, i.e. the kW, of the fire to be installed in various rooms, there is a simple allowance of 1-1½ watts per cu ft which is a sufficient guide bearing in mind that most fires are made in loadings which

Built-in electric fire with lighted surround.

are multiples of one kilowatt, i.e. 1, 2 or 3kW. The smallest size is only suitable for very small rooms; the 2kW size can be regarded as the general purpose loading suitable for rooms up to say 14ft × 16ft. Intermediate loadings can be obtained for some makes of reflector fire in which there are interchangeable elements of .75, 1.0 and 1.25kW, which give a useful adjustment of loading according to the heat loss of the particular room or other conditions of use, e.g. some extra power for very quick heating up might be required in a small flat whose occupants are out all day.

For bedrooms electric fires are made for building into walls (usually termed Inset type), or for fixing to the surface of a wall without any prepared recess, the latter being termed Outset or Panel type. In the past there has been a tendency to fix these fires at too great a height from the floor which from a comfort point of view is a serious fault; in a bedroom especially, warmth is required on the feet more than other parts of the body. One reason why fires were fixed at knee or waist height in the past may have been the fear of clothes catching fire but now that all fires have to comply with the Fireguards Act there is no reason to fix them at anything but the best height from the comfort point of view.

When specifying wiring for electric fires in bedrooms advantage should always be taken of the convenience of electricity to have a switch controlling the fire fixed at the bedside.

Fig. 2. Built-in electric fire.

British Standards

B.S.816 : 1952. Requirements for Electrical Appliances and Accessories (applies to all electrical appliances and accessories such as switches and socket-outlets not more specifically covered by other British Standards).

B.S.1670 : 1951. Safety Requirements for Electric Fires.

B.S.1945 : 1953. Fireguards for heating appliances.

Codes of Practice

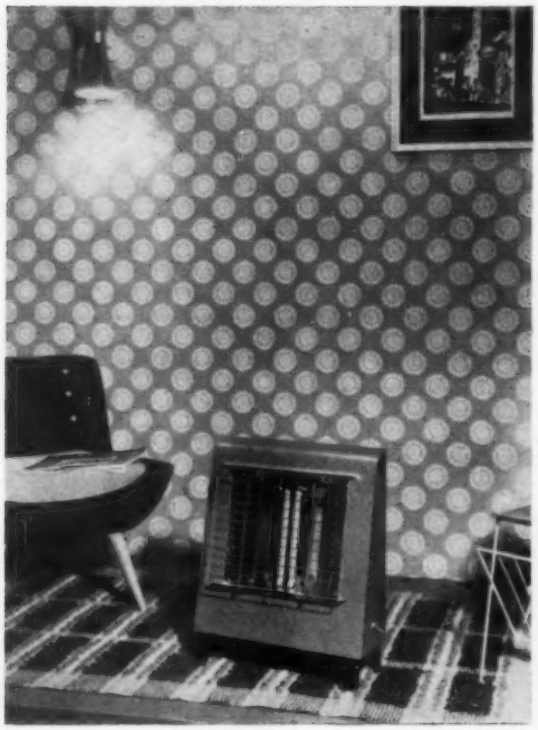
C.P.321. Electrical Installations — General.

C.P.321.101. Choice, Installation and Maintenance of Electric Wiring Systems.

C.P.324.201. Installation of Domestic Electric Space-Heating Equipment.

Regulations

Regulations for the Electrical Equipment of Buildings issued by the Institution of Electrical Engineers.



Cosyglo No. D2813, General Electric Co. Ltd.

The Lincoln, H.M.V. Household Appliances Ltd.

FIRMS MENTIONED IN THE TABLES

ARTIC FUSE & ELECTRICAL MFG. CO. LTD.,
Birtley, Co. Durham. Birtley 61.

BELLING & CO. LTD.,
Bridge Works, Southbury Road, Enfield, Middx. Howard 1212.

BERRY'S ELECTRIC LTD.,
Touchbutton House, Newman Street, London, W.1. Museum 6800

BESCOL ELECTRIC LTD.,
Parkfield Road, Birmingham 8. East 3281.

BRITISH NATIONAL ELECTRICS LTD.,
Newarthill, Motherwell, Lanarkshire. Motherwell 909.

BULPITT & SONS LTD.,
Swansea Works, Birmingham 1. Central 3231.

CARRON COMPANY
Carron, Falkirk. Falkirk 35/6/7.

CO-OPERATIVE WHOLESALE SOCIETY LTD.,
National Works, Hall Street, Dudley, Worcs. Dudley 2526/9

CRANMER & CHESHIRE LTD.,
Steward Street, Spring Hill, Birmingham 18. Edgbaston 1003.

A. D. DAVIDSON ELECTRIC CO.
62-66 Granville Street, Birmingham 1. Midland 2865.

THE DEXRAY ENGINEERING CO. LTD.,
34 Ardwick Green South, Manchester 13. Ardwick 5363.

DOWSING CO. (ELECTRICAL MFRS.) LTD.,
Kangley Bridge Road, Lower Sydenham, London, S.E.26. Sydenham 7016/8.

DRAKE & GORHAM WHOLESALE LTD.,
77 Long Acre, London, W.C.2. Temple Bar 3993.

ELECTROWAY HEATERS LTD.,
Loughborough, Leicestershire. Loughborough 4381.

FALK, STADELMANN & CO. LTD.
91 Farringdon Road, London, E.C.1. Holborn 7654.

FALKIRK IRON CO. LTD.,
Falkirk, Stirlingshire. Falkirk 1177.

FERRANTI LTD.,
Hollinwood, Lancashire. Failsworth 2000.

H. FROST & CO. LTD.,
Walsall, Staffs. Walsall 6421/5.

G. B. M. (ELECTRICAL) BIRMINGHAM
439 Moseley Road, Birmingham. 12. Calthorpe 2854.

GATEHILL MANUFACTURING CO. LTD.,
Crown Works, Stanhope Street, London, N.W.1. Euston 3246

GENERAL ELECTRIC CO. LTD.,
Magnet House, Kingsway, London, W.C.2. Temple Bar 8000

GRAFTON HEATER CO. LTD.,
13/15 Westland Place, City Road, London, N.1. Clerkenwell 0525/6.

H.M.V. HOUSEHOLD APPLIANCES LTD.,
Hayes, Middlesex. Southall 2468.

D. HALEY
Electrical Works, Longmoor Close, Liverpool 9. Aintree 4952

L. G. HAWKINS & CO. LTD.,
30-35 Drury Lane, London, W.C.2. Temple Bar 5915

HEATRAE LTD.
Heatrae Works, Norwich, Norfolk. Norwich 25131

HOTPOINT ELECTRIC APPLIANCE CO. LTD.
Fletton, Peterborough. Peterborough 5351

C. HOUNSLOW & CO. LTD.
Chalex Works, Southwick, Sussex. Hove 48822.

JACKSON ELECTRIC STOVE CO. LTD.,
143 Sloane Street, London, S.W.1. Sloane 6248

MIDLAND ELECTRIC MFG. CO. LTD.
Tyseley, Birmingham 11. Acocks Green 1695.

MONARCH ELECTRIC LTD.,
Vicarage Road, Lye, Worcs. Lye 238

T. B. MORLEY & CO. LTD.,
Liberty Chambers, Jameson Street, Hull, Yorks. Hull 15456

MORPHY-RICHARDS LTD.,
6 Conduit Street, London, W.1. Mayfair 9656

MYSTO MAID ELECTRICAL APPLIANCES,
Parkfield Road, Birmingham 8. East 3281

NICO LIGHT ENGINEERING CO. LTD.,
1 Laud Street, Croydon, Surrey. Croydon 5175/6

PREMIER ELECTRIC HEATERS
Keeley Street, Birmingham 9. Victoria 2104

REEVES ELECTRICAL & RADIO CO. LTD.,
Reelek Works, Baldock, Herts. Baldock 376

REVO ELECTRIC CO. LTD.,
Tipton, Staffs. Tipton 1891

SUTCLIFFE & CLARKSON LTD.,
Whittlefield Mill, Burnley, Lancs. Burnley 7234

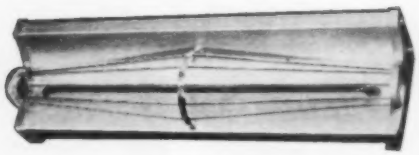
TYM'S ELECTRIC
Systym Works, Kennard Road, London, E.15. Maryland 5225

Electric Radiant Heaters

The following abbreviations are used in the tables: A B—armour bright, Al—aluminium, Ant—antique, Ant B—antique bright, B—bronze, Be—beige, Bl—black, Br—brown, Bs—brass, Bu—blue, C—cream, Ch—chocolate, Cl—caramel, Co—copper, Cr—chromium, En—enamel, EP—electro plate, G—green, Go—gold, Gt—gilt, Gy—grey, I—ivory, Mu—mushroom, P—pink, Pr—primrose, S—silver, Sa—satin, Sn—stone, St—stoved, TC—terra cotta, VE—vitreous enamel, W—white.

Supplier	Name or Model	Type	Total Loading	Overall Dimensions H×W×D in inches	Finish	Remarks
ARTIC FUSE & ELECTRICAL MFG. CO. LTD.	Sun-Glade	Floodlit portable reflector	2½ & 3 kW	—	Go, Co, S, I, Bu, G.	Cat. Nos. 1161 & 1164. Air is drawn in through the bottom louvres, heated, and circulated through top louvres out into the room.
	Sunny-Glow	Floodlit portable reflector	1½ & 1½ kW	—	Go, Co, S, I, Bu, G.	Cat. Nos. 1165 & 1166. This is a smaller edition of the "Sun-Glade."
BELLING & CO. LTD.	Adam	Period	2 kW	20½×24×7	A B	Catalogue No. 915
		Period	3 kW	22½×25½×7½	A B	Catalogue No. 916
		Period Coal	3 kW	27½×31½×15½	A B	Cat. No. 743B. Concealed elements.
	C.1	Firebar Inset	1 kW	13W×10½H Box back 12×9×1	E P B	S.B. wall panel 21½″×18½″×1½″ available
	C.2	Firebar inset	2 kW	13W×13½H Box back 12×12×1	E P B	S.B. wall panel 21½″×18½″×1½″ available
	Celtic	Period log	3 kW	25×36½×18	Ant	Heating elements concealed. Cat. 753B
	Cheery	Imitation coal	3 kW	19½×15½×9	S or S B	Cat. 360. Fitted with trivet which folds back
	Converta	Fireplace screen	2 kW	27½H×18½W	B	Firebar type. Cat. 178. Reflector type. Cat. 179. Minimum grate opening 20×13½×5.
	County	Portable reflector	2 & 3 kW	18×18×7	S, S B, S G	Cat. Nos. 231 & 232. Heat resisting handle fitted.
	Dainty	Portable firebar	2 kW	15½×14½×6½	S B or E P B	Cat. Nos. 226 & 226P. Concealed carrying handle.
	Dinkie	Portable firebar	1 kW	11½×12×6½	B or S.G.	Cat. No. 601.
		Portable firebar	2 kW	14½×12½×7½	B or S G	Cat. No. 602.
	Empire	Portable firebar	1 kW	10½×14½×4½	Be or Br VE	Cat. No. 401E. General purpose fire.
		Portable firebar	2 kW	13½×14½×4½	Be or Br VE	Cat. No. 402E General purpose fire
		Portable firebar	3 kW	16½×14×5½	Be or Br VE	Cat. No. 403E. General purpose fire.
	F/2	Firebar inset	2 kW	13H×17W Back 16×12×2	E P B	S.B. wall panel 16½″×20½″×2½″ and S.B. shelf 19½″wide×4½″ deep can be supplied.
	G/2	Reflector inset	2 kW	as F/2	E P B	As F/2.
	Hearth	Imitation coal or log	2 kW	12×19×15	Bright	Cat. No. 159 (coal) & 159A (log). Minimum grate size: 16½″W front×9½″W back×8½″D.
	Homeguard	Portable reflector	2 kW	19×19×9½	S, S B, S G	Cat. No. 155. Safety switch automatically cuts off current if fire is knocked over Heat resisting handle.
	Hotspur	Portable reflector	1 & 2 kW	11×15½×8½	S, S B, S G	Cat. No. 141 & 142.
	Medieval	Imitation coal or log	2 kW	24½×20½×10½	Ant	Cat. Nos. 639 & 639A.
	Melrose	Illuminated firebar or reflector	3 kW	26×22½×8½	Be or E P B	Cat. Nos. 273 & 273P (firebar) & 274 & 274P (reflector). Has moulded translucent base.
	Modern	Portable reflector	2 kW	16½×20×6½	S B	Cat. No. 228. Has heat resisting handle.
	Princess	Imitation coal or log	2 & 3 kW	21×19½×9½	S B or S G	Cat. Nos. 212 & 213 (coal) and 212A & 213A (log).
	Solray	Portable or wall reflector	1 & 2 kW	12×18½×7½ (1 kW) 13½×18½×7½ (2 kW)	C & Bl	Cat. Nos. 151 & 152. Fixing straps & cords for wall fixing.
	Waverley	Imitation coal fire bar & reflector	3 kW	26×22½×8½	Be & E P B	Cat. Nos. 263 & 263P (firebar) and 264 & 264P (reflector).
BERRY'S ELECTRIC LTD.	Adam Shell	Imitation fuel reflector	3 kW	29×31×20	Ant B	Concealed heating. Cat. No. 8.
	Adjustaberry	Radiant imitation fuel	2½ kW	—	A B	Cat. No. 457/C or 457/L. Suitable for any grate from 14" to 17" wide.
	Alderberry	Reflector imitation fuel	2 kW	24×19×9 (see remarks)	A B	Cat. No. 110. Reflector projects 6" backwards thus making overall depth 15".
	Berrylog	Radiant imitation fuel	1½ kW	15½×21×11	Sa Ant	Cat. No. A21/S
		As above	1½ kW	17½×26×10½	Sa Ant	Cat. No. A21/O.
	Beryl	Reflector	1 kW	11½×14½×8	S	Cat. No. 630. Special safety guard.
	Curb Heater	Radiant	2½, 3½ & 2 or 2½ kW	6½×21×4—457 6½×21×5½—98D 5×29½×5½—98E 5×37½×5½—98E	A B	Cat. Nos. 457, 98D & 98E

Sunhouse No. 4020,
H. Frost & Co. Ltd.



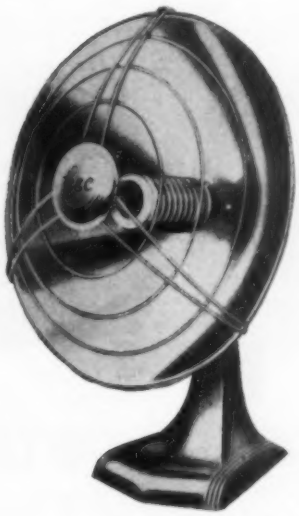
Saferod, High Level Heater,
Heatrae Ltd.

The Eden, Co-operative
Wholesale Society Ltd.

Nico-Reflecta-Ray,
Nico Light Engineering Co. Ltd.

Model D2757,
General Electric Co. Ltd.

The Morco Bowl,
T. B. Morley & Co. Ltd.

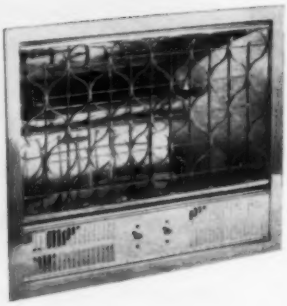


Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
BERRY'S ELECTRIC LTD. *continued*	Emberberry	Radiant imitation fuel	2 kW	14 × 23½ × 12	A B	Cat. Nos. 108 and 109 with dogs.
	Fleur-de-Lis	Reflector imitation fuel	3 kW	28 × 39 × 22	A B	Cat. No. 40. Concealed heating.
	Georgian	As above	3 kW	29 × 21 × 15	Ant B	Cat. No. 2. Concealed heating.
	Homeberry	As above	2 kW	20½ × 18½ × 9	S	Cat. No. 442. Special safety guard.
	Jacobean	As above	3 kW	28 × 20½ × 15	A B	Cat. No. 5. Concealed heating.
		As above	3 kW	28 × 39 × 22	A B	Cat. No. 14. Concealed heating.
	Masterberry	As above	2 kW	21½ × 22 × 9½	S	Cat. No. 444/C and 444/L.
	Mayberry	As above	2 kW	22 × 21 × 9	S	Cat. No. 441. Special safety guard.
	Queen Anne Pedestal	As above	3 kW	29 × 34½ × 18	Ant B	Cat. No. 11. Concealed heating.
	Regency	As above	2 kW	23½ × 21½ × 18½	Ant B	Cat. No. 20. Concealed heating.
	Vanguard	Reflector	2 kW	18 × 15 × 6½	S (base Bl)	Cat. No. 628. Safety switch automatically cuts off current if fire is knocked over.
	Wilton	Reflector imitation fuel	3 kW	30½ × 35½ × 21	Ant B	Cat. No. 42. Concealed heating.
	Woodberry	As above	3 kW	23½ × 20½ × 11	A B	Cat. No. 406. Special safety guard.
BESCOL ELECTRIC LTD.	Swallow	Portable reflector	2 kW	14 × 10½	Frame—C Sides—G	Cat. No. 320. The horizontal pencil elements are easily removed.
BRITISH NATIONAL ELECTRICS LTD.	F 101	Portable firebar	1 kW	10½ × 11 × 6½	Go	Gives both radiant and convection heating.
	F 102	As above	2 kW	13½ × 11 × 6½	Go	As above
	F 104	Portable reflector	1 kW	11½ × 16½ × 7½	1 & Ch En	Single rod element.

No. 251J. Jackson
Electric Stove Co. Ltd.

D2394 G,
General Electric Co. Ltd.

The Outset,
Revo Electric Co. Ltd.

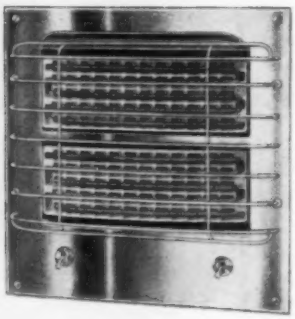


P3310 Panel,
Ferranti Ltd.

Sunglo,
Carron Company

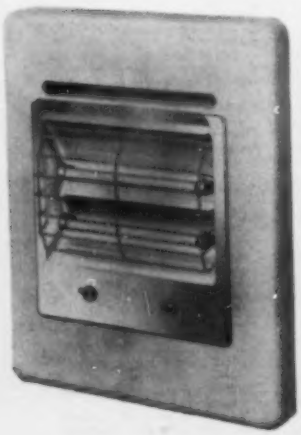
Avon Model FA/20,
Morphy-Richards Ltd.

Model HCR 4,
Sutcliffe & Clarkson Ltd.

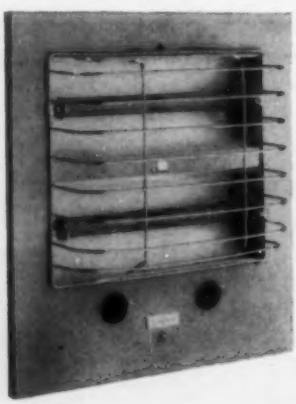


The Inset,
Revo Electric Co. Ltd.

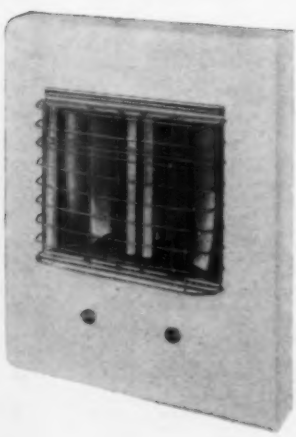
No. 252J. Jackson
Electric Stove Co. Ltd.



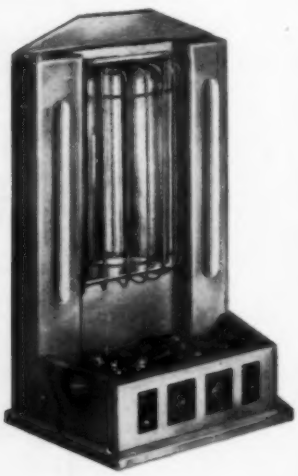
Sunhouse No. A17,
H. Frost & Co. Ltd.



D 2853 Cosyglo,
General Electric Co. Ltd.



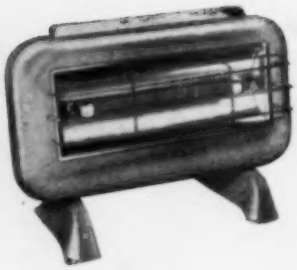
Model 1056, Grafton
Heater Co. Ltd.



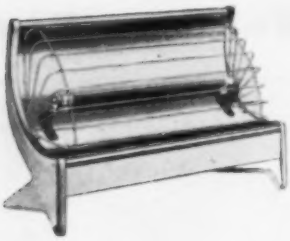
Electric Radiant Heaters

Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
BULPITT & SONS LTD.	Cromwell	Portable reflector	2 kW	—	A B, Bs	Cat. No. 795. Suitable for reproduction or period furnishings.
	Waldorf	Portable reflector	1 kW	—	C & G En	Cat. No. 820. Fire to B.S.1670, guarded to B.S.1945.
	Woodstock	As above	1 & 2 kW	—	Go or Sa S	Cat. Nos. 831, 832. Both have Bl bases.
CARRON CO.	Curtsey	Portable reflector	1 & 2 kW	12 × 13¼ × 9	G, Bl, Bu & Go, C & Go, Br	Low price category fire.
	Pedestal	As above	1 & 2 kW	13½ × 16 × 9	S	Swivel design. For floor or wall mounting.
	Sirius	Portable firebar	1 kW	10 × 14½ × 4½	Be, G & C, V E	Styled for use in home, office or shop.
		As above	2 kW	12½ × 15 × 5½	As above	As above
	Sunglo	Portable reflector	2½ kW	18½ × 16½ × 8½	Cr	Copper reflector with independent glow.
CO-OPERATIVE WHOLESALE SOCIETY LTD.	Ascot	Portable reflector	1 kW	—	St En	Also suitable for wall mounting.
	Avon	Portable firebar	1 & 2 kW	—	St En	Removable back panel & hinged carrying handle.
	Bowl	Bowl reflector	—	10" dia	Cr	Hinged fixing to cast iron base.
	Eden	Portable firebar	1 & 2 kW	—	St En	Hinged carrying handle.
	Windsor	Portable reflector	1 & 2 kW	—	V E	Has strong cast iron body.
CRANMER & CHESHIRE LTD.	422	Portable reflector	1 & 2 kW	12H × 16W	S Gy	Has tilting reflector.
	424	As above	2 kW	14½ × 16½ × 9	S Gy	Double tilting reflector (one element controlled from mains).
	426	Wall fixing reflector	1 kW	9½ × 16 × 9	S Gy	Specially designed as bathroom heater
	429	As above	½ kW	9½ × 16 × 9	S Gy	As above
	430	Portable reflector	½ & 1½ kW	12H × 14W	S Gy	Has tilting reflector.
	438	As above	2 kW	17 × 14½ × 9	S Gy	Has rigid reflector with glow lamp behind grille.
A. D. DAVIDSON ELECTRIC CO.	Davey	As above	1 kW	11½ × 13 × 9	Cr	Cat. No. F220.
		As above	2 kW	12½ × 13 × 9	Cr	Cat. No. F221.
	Diamond	As above	1 & 2 kW	15½ × 15½ × 8½	Sn & G	Cat. Nos. F230 & F231.
DEXRAY ENGINEERING CO. LTD.	R 10	Portable or inset reflector	2 kW	—	C or C & Go	Reflector is surrounded by wrought iron scrollwork. Can also be supplied with horizontal firebars.
	De Luxe	As above	2 kW	—	—	Completely panelled in mirrored plate glass.
	R 15	Wall mounting reflector	1 kW	8½ × 17 × 6	C & Bl, St En	Suitable for bathrooms, nurseries, etc. Suitable for floor standing or mounting on wall or ceiling. Swivel bracket. Reflector and screen in bright chrome.
	R 21 & R 22	Portable reflector	1 & 2 kW	13 × 16 × 9	B	Has adjustable reflector and hot air is emitted through special convector channel
	R 23	As above	2 kW	19½ × 22 × 7½	B, C	—
DOWSING CO. ELECTRICAL MANUFACTURERS) LTD.	N 102	As above	½ kW	—	C, En	—
	N 112	As above	1 kW	—	C, En	—
	N 121	As above	1 kW	—	C, En	—
	N 131	As above	2 kW	—	C, En	—
	N 151	As above	2 kW	—	C, En	—
DRAKE & GORHAM WHOLESALE LTD.	K S 1	Portable reflector	2 kW	13½ × 16½ × 10½	Sa, S	Fitted with dual plug-in elements which can be switched to half-loading.
	K S 2	As above	1.6 kW	12½ × 14 × 9½	Sa S	As above
	1029a	As above	1.4 kW	12½ × 11½ × 6½	B	—
ELECTROWAY HEATERS LTD.	I R 12	Inset reflector	1 kW	Fire: 5½ × 12½. Back box: 4 × 12.	Cr	Vertical reflector with pencil element. Tiled or composition surrounds.
	V H 2	As above	2 kW	Fire: 8½ × 12½. Back box: 8 × 12.	Cr	As above.
	V H 3	As above	3 kW	Fire: 12½ × 12½. Back box: 12 × 12.	Cr	As above.
	V K 2	As above	2 kW	Fire: 13½ × 17½. Back box: 12 × 16.	Cr	As above.
	I A 2	As above	2 kW	Fire: 16½ × 16½. Back frame: 16 × 16.	Cr	Parabolic type reflector. Tiled or composition surrounds with recess.
	I H 1 R	As above	1 kW	Fire: 12½ × 9. Back box: 12 × 8.	Cr	Horizontal reflector with pencil element. Tiled or composition surrounds.
	I H 2 R	As above	2 kW	Fire: 12½ × 12½. Back box: 12 × 12.	Cr	As above.
	I H 3 R	As above	3 kW	Fire: 12½ × 16½. Back box: 12 × 16.	Cr	As above.

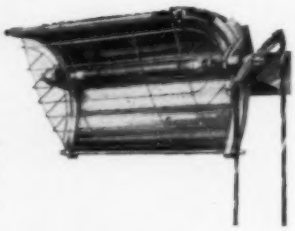
No. 426 Nichro
Cranmer & Cheshire Ltd.



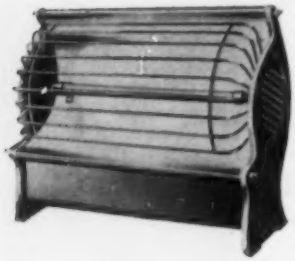
Jewel, 1 kW
Premier Electric Heaters



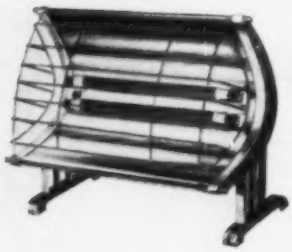
2773/4,
General Electric Co. Ltd.



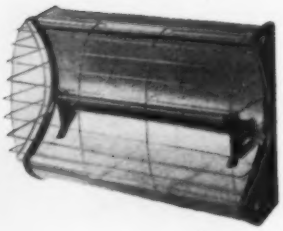
Parabain,
Premier Electric Heaters



Reflex, 1 kW,
Midland Electric Mfg. Co. Ltd.



Paraglow,
Premier Electric Heaters



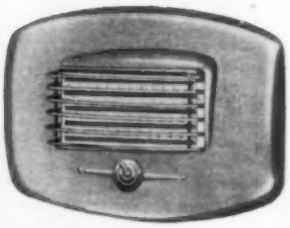
P5160 Builders Fire
Ferranti Ltd.

Model R3,
G.B.M. (Electrical) B'ham

Marilyn LGH 34/35
L. G. Hawkins & Co. Ltd.

Falco No. 41,
Falkirk Iron Co. Ltd.

Windsor, 1 kW, Co-operative
Wholesale Society Ltd.



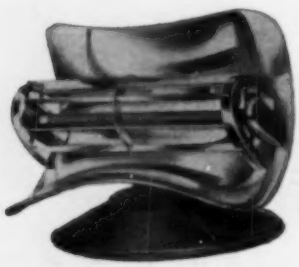
Walbeam, 1 kW,
Midland Electric Mfg.
Co. Ltd.

Ely Fire, H.M.V.
Household Appliances Ltd.

Cray Model FC/20,
Morphy-Richards Ltd.

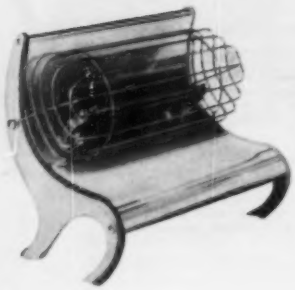
Doric No. 501
Monarch Electric Ltd.

The Tubula,
Revo Electric Co. Ltd.



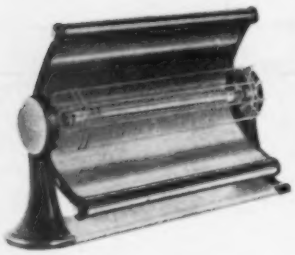
Electric Radiant Heaters

Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
ELECTROWAY HEATERS LTD (continued)	I H 1	Inset panel bar	1 kW	Fire: 12½ × 9 Back box: 12 × 8.	Cr	For mounting on tiled or composition surrounds.
	I H 2	As above	2 kW	Fire: 12½ × 12½ Back box: 12 × 12.	Cr	As above.
	I H 3	As above	3 kW	Fire: 12½ × 16½ Back box: 12 × 16.	Cr	As above.
	I E 1 R	Inset reflector	1 kW	Fire: 12½ × 9 Back box: 12 × 8.	St En	Horizontal reflector with pencil element. Tiled or composition surrounds.
	I E 2 R	As above	2 kW	Fire: 12½ × 12½ Back box: 12 × 12.	St En	As above.
	I E 3 R	As above	3 kW	Fire: 12½ × 16½ Back box: 12 × 16.	St En	As above.
	I E 1	Inset panel bar	1 kW	Fire: 12½ × 9 Back box: 12 × 8.	St En	For mounting on tiled or composition surrounds.
	I E 2	As above	2 kW	Fire: 12½ × 12½ Back box: 12 × 12.	St En	As above.
	I E 3	As above	3 kW	Fire: 12½ × 16½ Back box: 12 × 16.	St En	As above.
	I G 1 R	Wall reflector	1 kW	Fire: 16½ × 12½ Back box: 12 × 8.	St En	Horizontal reflector with pencil element. Direct wall fixing with concealed screws.
	I G 2 R	As above	2 kW	Fire: 16½ × 16½ Back box: 12 × 12.	St En	As above.
	I G 1	Wall panel bar	1 kW	Fire: 16½ × 12½ Back box: 12 × 8.	St En	Direct wall fixing with concealed screws.
	I G 2	As above	2 kW	Fire: 16½ × 16½ Back box: 12 × 12.	St En	As above.
	W I R 12	Wall reflector	1 kW	Fire: 5½ × 12½ Plaque: 12 × 19½.	Fire: Cr Plaque: St En	Vertical reflector with pencil element. Direct wall fixing with concealed screws. No back box required.
	W V H 2	As above	2 kW	Fire: 8½ × 12½ Plaque: 16 × 19½.	Fire: Cr Plaque: St En	As above.
	W V H 3	As above	3 kW	Fire: 12½ × 12½ Plaque: 17½ × 19½.	Fire: Cr Plaque: St En	As above.
	W H 2	Wall panel bar	2 kW	Fire: 12½ × 12½ Plaque: 17½ × 19½.	Fire: Cr Plaque: St En	Direct wall fixing with concealed screws. No back box required.
	W H 2 R	Wall reflector	2 kW	Fire: 12½ × 12½. Plaque: 17½ × 19½.	Fire: Cr Plaque: St En	Horizontal reflector with pencil element. Direct wall fixing with concealed screws. No back box required.
	W E 2	Wall panel bar	2 kW	Fire: 12½ × 12½ Plaque: 17½ × 19½.	St En	Direct wall fixing with concealed screws. No back box required.
	W E 2 R	Wall reflector	2 kW	Fire: 12½ × 12½ Plaque: 17½ × 19½.	St En	Horizontal reflector with pencil element. Direct wall fixing with concealed screws. No back box required.
	I G 2 F	Wall panel bars	2 kW	—	Cr or St En	The fuse permits direct connection to ring main circuits.
	R 12	Portable or wall mounting reflector	1 kW	12 × 14 × 8½.	S St En	Parabolic swivel type reflector. Suitable for bathrooms.
	510	Portable panel bar	1 kW	10½ × 10 × 6.	St. En	Colour finish to choice.
	520	As above	2 kW	11½ × 13 × 6½.	St En	As above.
	710	As above	1 kW	14½ × 11½ × 5½.	St En	As above.
	720	As above	2 kW	14½ × 14½ × 6½.	St En	As above.
	71	Portable reflector	1 kW	14½ × 11½ × 5½.	St. En	Horizontal reflector with pencil type element.
	72	As above	2 kW	14½ × 14½ × 6½.	St En	As above
	R 2	As above	2 kW	14 × 12 × 8½.	S St En	Parabolic type reflector with pencil type element.
	95	Portable screen reflector	2 kW	19 × 26½ × 5½.	St En	Long vertical type reflector with pencil type element.
FALK, STADELMANN & CO. LTD.	Bathroom U 95670	Wall mounting reflector	1 kW	11½ × 16 × 10.	C St En	Direction of heat can be adjusted by remote control.
	U 95664	Portable bowl reflector	0.6 kW	12H × 10Dia.	C, Gy	Can also be fixed to wall.
	U 95710	As above	0.6 kW	13H × 12Dia.	C	As above.
	Economist	Portable reflector	1 & 2 kW	11½ × 16½ × 10.	C En	Cat. Nos. U 95655 & U 95656.
	Felicity U 95704	Portable reflector	2 kW	21 × 19½ × 4½.	Go	Surrounding metal screen is illuminated from interior.
	Olympian U 95708 & 9	Portable reflector	1 kW	9½ × 13 × 7	B	Horizontal reflectors with pencil type element.
		As above	2 kW	15 × 13 × 7.	B	As above.
	Serenity U 95705	Portable reflector	2 kW	24½ × 24 × 7.	Go	Surrounding metal screen illuminated to give three different colour effects



Curtsey,
Carron Company

No. HF151, Hotpoint
Electric Appliance Co. Ltd.



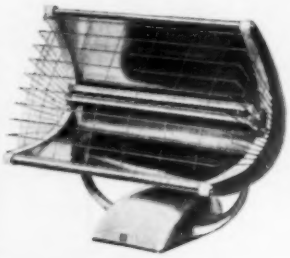
Solray No. 151/2,
Belling & Co. Ltd.

Alderberry No. 110,
Berry's Electric Ltd.

Sirius,
Carron Company

Sunny Glow, Artic Fuse &
Electrical Mfg. Co. Ltd.

Inventum, 1029A, Drake &
Gorham Wholesale Ltd.



Model F3102,
Ferranti Ltd.

Waldorf No. 820,
Bulpitt & Sons Ltd.

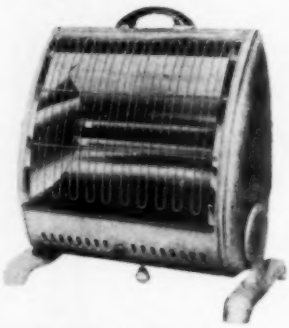
Felicity No. U.95704,
Falk, Stadelmann & Co. Ltd.

Davey Diamond No. F231,
A. D. Davidson Electric Co.

Model P33132,
Ferranti Ltd.

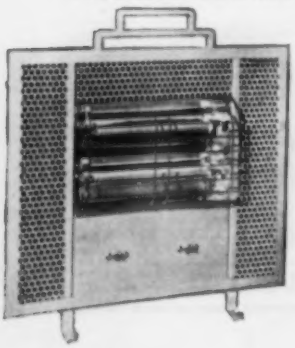
Wilton No. 42,
Berry's Electric Ltd.

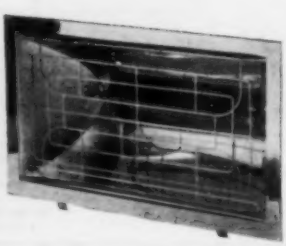
Model F101,
British National Electrics Ltd.



Homeguard No. 155,
Belling & Co. Ltd.

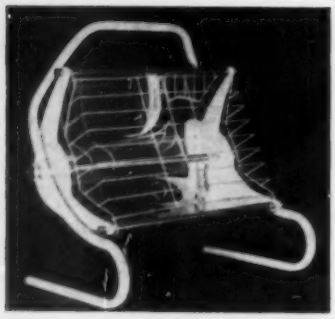
The Derwent,
T. B. Morley & Co. Ltd.



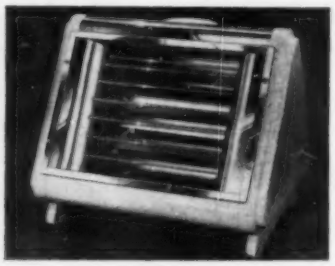


Electric Radiant Heaters

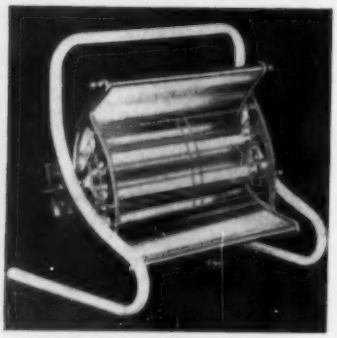
Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
FALKIRK IRON CO. LTD.	Falco 39	Portable reflector	1 kW	9½ × 13½ × 6½.	G, C, Bu, Go	Horizontal pencil type element.
	Falco 41	As above	2 kW	11 × 15½ × 8.	As above	As above.
FERRANTI LTD.	F 4144	Floor reflector	1 kW	11½ × 12½ × 7½.	C, En	As above.
	F 5164	As above	2 kW	11½ × 12½ × 7½.	C, En	As above.
	F 4140	As above	2 kW	15½ × 13 × 9½.	C, En & Br Legs	As above.
	F 3111	As above	2.5 kW	(1)20½ × 18 × 11. (2)20½ × 27 × 14.	S, Co En	Ornamental front projecting feet are available (see dimensions column—size (1) without and (2) with front projection).
	F 3117	As above	2.5 kW	(1)20½ × 18 × 11. (2)20½ × 18 × 11.	S, Co En	As above and also having illumination under the reflector.
	F 3102	Floor reflector	1½ & 2 kW	14 × 13 × 9½.	C En	Horizontal reflector with pencil element.
	F 3108	As above	2 & 2½ kW	14 × 17 × 9½	C En	As above.
	W 5148	Wall reflector	1 kW	9½ × 12½ × 9½.	C, S, En	Suitable for bathrooms, nurseries, etc. Tilting of horizontal reflector controlled by an adjusting rod.
	W 5150	As above	1½ kW	9½ × 16½ × 9½.	C, S, En	As above.
	P 5160	Reflector	2 kW	10 × 13½ × 5.	B, C, En	Builders fire with horizontal reflector and pencil element, designed for bedrooms, small living rooms, etc.
	P 3310	Panel reflector	2½ kW	22½ × 26½ × 10½.	Frame: Cr	Supplied with frame and ventilating grille. Decorative screen extra.
	P 33122	As above	1½ kW	13½ × 19½ × 7½.	Cr	Decorative screen can be supplied.
	P 33132	As above	2 kW	15½ × 25½ × 9.	Cr	As above.
H. FROST & CO. LTD.	147	Portable panel bar	1 kW	—	Sa, TC	No switch. For A.C. or D.C. mains.
	148	As above	2 kW	—	Sa, TC	A.C. switch fitted. A.C./D.C. model available
	261	Portable reflector	1 kW	—	Cr, Bl	Horizontal reflector. No switch. For A.C. or D.C. mains.
	262	As above	2 kW	—	Cr Bl	Horizontal reflector. A.C. switch fitted. A.C./D.C. model available.
	163	Wall reflector	1 kW	—	C	Horizontal reflector. Designed specifically for bathroom. Wall fixing.
	172	Inset reflector	2 kW	Panel: 12½ × 18 Frame: 12 × 16 Projection: 2.	Br St En, Cr	Vertical reflector with pencil element.
	177	As above	2 kW	Panel: 5½ × 14½ Frame: 4 × 14 Projection: 2.	Br St En, Cr	As above.
	A 17	As above	2 kW	Panel: 14 × 12½ Frame: 12 × 12 Projection: 2	Br St En, Cr	Horizontal reflector with pencil element.
	B 17	As above	1 kW	Panel: 9½ × 14 Frame: 8 × 12 Projection: 2	Br St En, Cr	As above.
	A 14	Inset panel bar	1 kW	—	Br St En, Cr	—
	A 24	As above	2 kW	—	Br St En, Cr	—
	4021	Inset reflector	2 kW	Panel: 12½ × 16½ Frame: 12 × 16 Projection: 4½	Br St En	Horizontal reflector with pencil element. Designed for slabbing into tile panel.
	7021	As above	2 kW	Panel: 15 × 20½ Frame: 14 × 20 Projection: 6	Br St En	As above.
	7031	As above	3 kW	Panel: 15 × 20½ Frame: 14 × 20 Projection: 6	Br St En	As above.
	401	Wall panel reflector	1 kW	Surround: 9½ × 17 Return to wall: 3.	Br St En	Horizontal reflector with pencil element.
	402	As above	2 kW	Surround: 12½ × 17 Return to wall: 3.	Br St En	As above.
	403	Wall panel bar	1 kW	Surround: 9½ × 17 Return to wall: 3.	Br St En	—
	404	As above	2 kW	Surround: 12½ × 17 Return to wall: 3.	Br St En	—
	4020	Wall panel reflector	2 kW	Surround: 14½ × 16½ Return to wall: 5.	Br St En	Horizontal reflector with pencil element. Designed for fixing to finished wall.
	7020 & 7030	As above	2 & 3 kW	Surround: 17½ × 23½ Return to wall: 7	Gy	As above.
G B M (ELECTRICAL) BIRMINGHAM	R 1	Portable reflector	1 kW	11 × 15½ × 9.	Bl, C, V E	Corrugated horizontal reflector with pencil element.
	R 2	As above	2	11 × 15½ × 9.	Bl, C, V E	As above.
	R 3	As above	2	14 × 17½ × 11.	Bl, C, V E	Smooth horizontal reflector with pencil element.
GATEHILL MANUFACTURING CO LTD.	Curzon	Portable reflector	½, 1 & 2 kW	—	Go	Horizontal reflector with pencil element. Plastic handle. Also adaptable for wall mounting.
	Richmond	As above	1 & 2 kW	—	Go	—



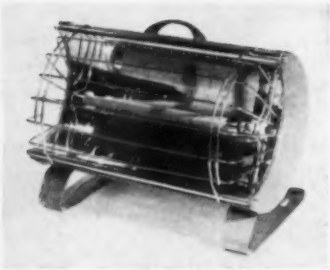
Right: The Dandy, No. 4332,
Heatrae Ltd.



Left: Model No. 121
Dowsing Company Ltd.

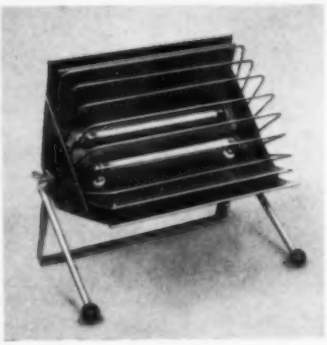


Right: The Curzon,
Gatehill Manufacturing Co. Ltd.



Left: Swallow No. 320,
Bescol Electric Ltd.

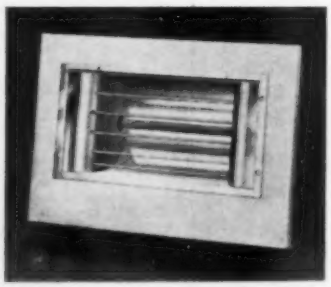
Right: Model R21/22,
Dexray Engineering Co. Ltd.



Left: Model 1001
Mysto Maid Electrical Appliances

Right: Economist, U95655/6
Falk, Stadelmann & Co. Ltd.

Left: Model No. 106/36
Grafton Heater Co. Ltd.



Right: The Pilot No. 4431
Heatrae Ltd.

Electric Radiant Heaters

Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
GENERAL ELECTRIC CO. LTD.	D 2342 G	Portable firebar	2 kW	13½ × 13⅜ × 6½.	Be, G, V E	—
	D 2391 G	Inset fire bar	1 kW	Fire: 11½ × 13⅜ × 4½ Surround opening: 8⅜ × 11½ × 1⅜.	B	Can be fitted with deflector plate.
	D 2392 G	As above	2 kW	Fire: 14⅜ × 13⅜ × 4½ Surround opening: 11⅜ × 11½ × 1⅜.	B	As above.
	D 2394 G	Wall mounting fire	1 kW	14½ × 15½ × 5½.	Be, V E	—
	D 2395 G	As above	2 kW	17½ × 15½ × 5½.	Be, V E	—
	D 2496 G	Portable firebar	1 kW	10½ × 11 × 6½.	B, C, G	—
	D 2497 G	As above	2 kW	13½ × 11 × 7½.	B, C, G	—
	D 2757	Bowl reflector	½ kW	12½H × 11 dia.	C	Spiral element.
	D 2766 & 2767	Portable reflector	1 & 2 kW	11½ × 16½ × 6½.	C	Also for wall mounting. Horizontal reflector with pencil element.
	D 2773 & 2774	As above	1 & 2 kW	11 × 15½ × 7.	C or S (B)	Horizontal reflector with pencil element.
	D 2812	As above	2 kW	17½ × 12½ × 8.	C or S (B)	Vertical reflector with pencil element.
	D 2813	As above	2 kW	19½ × 17⅛ × 7	G or S (B)	As above.
	D 2814	Screen reflector	2 kW	27½ × 21 × 8½.	B	Vertical reflector with pencil element and side illuminations.
	D 2852 G	Inset reflector	2 kW	Fire: 17½ × 14½ × 5½. Surround opening: 15⅝ × 11½ × 3.	B	Vertical reflector with pencil element.
	D 2853	Wall mounting reflector	2 kW	22½ × 17½ × 5½.	C, B	Vertical reflector with pencil element.
GRAFTON HEATER CO. LTD.	106 36	Bowl	0.6 kW	—	Various Colours	Can be fitted with either safety or close mesh guard.
	1055	Portable reflector	—	—	As above	Horizontal reflector with pencil element.
	1056	Portable reflector	¾ kW	18 × 11 × 9.	As above	Vertical reflector with pencil element. Coal effect.
	1057	As above	2 kW	22 × 16 × 8.	As above	Horizontal reflector with pencil element. Coal effect.
H.M.V. HOUSEHOLD APPLIANCES	Ely (F 1)	Multi-parabola reflector	1 kW	9½ × 11½ × 6½.	Gy St En	Incorporates special safety guard and concealed carrying handle. Radiation over an arc of 150 deg.
	Lincoln (F 3)	As above	2 or 3 kW	10½ × 14½ × 10½.	As above	As above.
D. HALEY	Glotherm	Portable firebar	1 kW	10½ × 10½ × 7½	Be	Strong welded steel, plated guard.
L. G. HAWKINS & CO. LTD.	Elfin L G H 36	Portable reflector	1 kW	8½ × 12½ × 6.	C	Horizontal reflector with pencil element.
	Glory L G H 32 & 33	As above	1 & 2 kW	13½ × 13½ × 8½.	C, Mu, G	As above.
	Marilyn L G H 34	As above	1 kW	8½ × 13½ × 8½.	I, S, Mu	Horizontal reflector with pencil element. For wall hanging or floor standing.
	Marilyn L G H 35	As above	2 kW	7½ × 13½ × 8½.	As above	As above.
	Pixie	As above	1 kW	7½ × 13 × 8½.	Mu, S, C	As above.
HEATRAE LTD.	Dandy 4332	Portable reflector	2 kW	13½ × 16½ × 12.	I	Horizontal reflector with pencil element. Ornamental feet. Non-metallic lifting handle
	Pilot 4431	As above	1 kW	14½ × 18½ × 9½.	I—body Bl—feet	As above.
	Saferod	Reflector, high level safety	1 kW	6 × 25 × 5	Mu	Safety long life metal sheathed element. Specifically designed for bathrooms, nurseries etc. Supported by special wall bracket. All live parts totally enclosed.
HOTPOINT ELECTRIC APPLIANCE CO. LTD.	93	Portable radiant firebar	2 kW	—	C V E	—
	HF 151	Portable reflector	1 kW	—	C St En	Horizontal reflector with grooved rod element.
	HF 152	As above	2 kW	—	As above	As above.
C. HOUNSLOW & CO. LTD.	Albemarle 3008	Imitation fuel	2 kW	—	Go, C, St En	—
	Standard 3001	Portable reflector	1 kW	—	Co	—
	Standard 3002	As above	2 kW	—	Co	—
	Standard 3003	As above	1 kW	—	Co	—
	Standard 3004	As above	2 kW	—	Co	—
	Vertic 3005	As above	1 kW	—	C, Co	—
	Vertic 3006	As above	2 kW	—	Gy, Co	—

Electric Radiant Heaters

Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
JACKSON ELECTRIC STOVE CO. LTD.	251 J	Inset reflector	2 kW	12½ × 12½ for surround opening 12 × 12 × 2½.	Cr	One single and one double pole switch. Suitable for any surround.
	252 J	Panel reflector	2 kW	22½H × 18W	Mu St En	Horizontal reflector with pencil elements. Air flow convection system provides warm current of air from opening above reflector
	253 J	Portable reflector	2 kW	14½H × 12½W	Cr	Horizontal reflector with pencil elements.
	731 J & 732 J	Portable reflector	1 & 2 kW	11½H × 12W	Go	Horizontal reflector with pencil elements.
MIDLAND ELECTRIC MANUFACTURING CO. LTD.	Memglo	Portable flat bar	1 kW	13 × 11½ × 7½	Sn	Constructed from sheet steel.
		As above.	2 KW	13 × 11½ × 8½	Sn	As above.
	Memray	Portable reflector	1 kW	13½ × 10½ × 6½	B, C	Horizontal swivel reflector with pencil elements. May also be wall mounted.
		As above	2 kW	17 × 12½ × 8	B, C	As above.
	Reflex	As above	1 kW	13½ × 10½ × 6½	Sn, Mu	Horizontal fixed reflector with pencil elements.
		As above	2 kW	16½ × 12½ × 8	Sn, Mu	As above.
	Walbeam	Outset flat bar	1 kW	14 × 9½ × 3½	Sn, Mu	For fitting direct to wall without recess.
		As above	2 kW	14 × 14½ × 4½	Sn, Mu	As above.
	Walray	Inset reflector	2 kW	16½ × 14½ × 6½ Back box: 12 × 12 × 2	Sn, Mu	For fixed installation where recess is provided in wall.
MONARCH ELECTRIC LTD.	Doric 501	Portable firebar	1 kW	12½ × 10½ × 6½.	Go, Cl, G En	Made from stamped sheet-metal.
	Doric 502	As above	2 kW	12½ × 14 × 8½	Go, Cl, G En	As above.
T. B. MORLEY & CO. LTD.	Aire	Portable reflector	1 & 2 kW	11½ × 17½ × 6½.	C	Horizontal reflector with rod type element.
	Bowl	As above	0.6 kW	10 dia. bowl × 11½H	C	Adjustable reflector with bolt on element.
	Derwent	As above	1 & 2 kW	11½ × 16½ × 7½	C	Horizontal adjustable reflector with rod type element.
	Don	As above	½ & 1½ kW	10½ × 13 × 6½	C	Horizontal fixed reflector with rod type element.
		As above	1 & 2 kW	10½ × 16 × 6½	C	As above.
	Humber	As above	½ & 1½ kW	11½ × 13 × 5½	C	Horizontal adjustable reflector with rod type elements.
	Severn	Portable firebar	1 kW	10 × 11½ × 7	B	Flat bar type elements.
		As above	2 kW	13½ × 11½ × 7½	B	As above.
	Thames	Portable reflector	1 kW	10 × 11½ × 7	B	Horizontal fixed reflector with rod type elements.
		As above	2 kW	13½ × 11½ × 7½	B	As above.
MORPHY-RICHARDS LTD.	Avon FA10 & FA20	As above	1 & 2 kW	18 × 16½ × 8½	B	As above.
	Cray FC750 & FC15	As above	½ & 1½ kW	11½ × 14½ × 6½	B	As above.
	Cray FC10 & FC20	As above	1 & 2 kW	11½ × 17½ × 6½	B	As above.
MYSTO MAID ELECTRICAL APPLIANCES	1001 Bowl	As above	0.6 kW	12 dia.	Co or Cr	Adjustable solid copper reflector.
	1002 Bowl	As above	0.6 kW	11 × 13½ × 10 dia.	B or Bu	Adjustable aluminium reflector.
NICO LIGHT ENGINEERING CO. LTD	Reflecta-Ray 6014	Portable bowl reflector	0.6 kW	11½H × 10½dia.	I, Bl	Adjustable copper reflector with plug-in type element.
PREMIER ELECTRIC HEATERS	Carlton, 5141, 5142, 5143	Reflector, imitation coal effect	2 kW	22½ × 21½ × 10	5141—S 5142—Co 5143—Go	Horizontal reflector with rod type elements.
	Guardian, 5401, 5402, 5403	Portable reflector	2 kW	14 × 17 × 9½	5401—Go 5402—P 5403—Bu Gy	As above.
	Jewel, 5510, 5511	As above	1 kW	9½ × 14½ × 6	5510—C 5511—G	As above.
	Jewel, 5520, 5521	As above	2 kW	14½ × 14½ × 7½	5520—C 5521—G	As above.
	Parabain 5321	Wall mounting reflector	1 kW	9½ × 15½ × 6½	I	Horizontal adjustable reflector with rod type element. Specifically designed for bathroom or kitchen.
	Parabeau, 5372/G	Portable reflector	2 kW	17 × 15½ × 7½	Gt	Horizontal reflector with rod type element.
	Paraglow, 5380, 5381	As above	1 kW	11½ × 12½ × 7½	5380—C 5381—B	As above.
	Paraglow, 5390, 5391	As above	2 kW	11½ × 14½ × 7½	5390—C 5391—B	As above.
	Screen Heater 5420	Portable radiant heater	1 kW	31H × 20W	C &W, St En	The heating element is fused on to the back of an armour plate glass panel.

Supplier	Name or Model	Type	Total Loading	Overall Dimensions H × W × D in inches	Finish	Remarks
REEVES ELECTRICAL AND RADIO CO. LTD.	Adjustable	Portable reflector	1 & 2 kW	—	C, S Gy, Mu, G & Bu	—
	Champion	As above	½ & 1½ kW	—	As above	Horizontal reflector with rod type element.
	Handy	As above	1 & 2 kW	—	As above	—
	Minor	As above	1 kW	—	As above	—
	Popular	As above	½ & 1½ kW	—	As above	—
	Screen	As above	½ & 1 kW	—	As above	Vertical reflector with rod type element.
	Wizard	As above	1 & 2 kW	—	As above	—
REVO ELECTRIC CO. LTD.	Dolphin	Portable firebar	1 kW	11 × 14 × 6	Be V E	Cat. No. F13950—Block type fire bars.
		As above	2 kW	13½ × 15½ × 6	Be V E	Cat. No. F13948—Block type fire bars.
	Reflexam	Wall mounting reflector	1 kW	10½ × 15½ × 8½	Cr, S	Cat. No. F14546. Horizontal adjustable reflector with pencil type element. Designed for nurseries, etc.
		As above	2 kW	11½ × 15½ × 9	Cr, S	Cat. No. F14548. Horizontal adjustable reflector with pencil type elements. Designed for nurseries, etc.
	Revo-Inset	Inset firebar	1 kW	9 × 12½ × 4½	G, Gy, Be	Cat. No. F13955. Designed for slabbing into tiled surrounds and supplied with special steel slabbing frame. Can also be screwed direct to wall mounts and back can be fitted with enclosed sheet metal box in lieu of slabbing frame.
		Inset reflector	1 kW	9 × 12½ × 4½	G, Gy, Be	Cat. No. F13957. Horizontal reflector with pencil element. Designed for slabbing into tiled surrounds and supplied with special steel slabbing frame. Can also be screwed direct to wall mounts and back. Can be fitted with enclosed sheet metal box in lieu of slabbing frame.
		Inset firebar	2 kW	12½ × 12½ × 4½	G, Gy, Be	Cat. No. F13956. Remarks as for Cat. No. F13955 above.
		Inset reflector	2 kW	12½ × 12½ × 4½	G, Gy, Be	Cat. No. F13958. Remarks as for Cat. No. F13957 above.
	Revo-Outset	Wall mounting firebar	1 kW	14½ × 11½ × 6	G, Gy, Be	Cat. No. F14639. Fitted with block type firebars.
		Wall mounting reflector	1 kW	14½ × 11½ × 6	G, Gy, Be	Cat. No. F14549. Horizontal reflector with pencil type element.
		Wall mounting firebar	2 kW	14½ × 14½ × 6	G, Gy, Be	Cat. No. F14640. Fitted with block type fire bars.
		Wall mounting reflector	2 kW	14½ × 14½ × 6	G, Gy, Be	Cat. No. F14550. Horizontal reflector with pencil type elements.
	Tubula	Portable reflector	1 & 2 kW	14 × 14½ × 10½	Cr, S	Cat. Nos. F14542 & F14544. Horizontal reflector with pencil type elements. Designed to harmonize with modern architectural design and contemporary furnishings
SUTCLIFFE & CLARKSON LTD.	HCR 4	Reflector and Convector	2 kW	16 × 13 × 10	B	Has 1 kW reflector fire in addition to 1 kW convector heater. Horizontal reflector with pencil element. The radiant heat can be switched off when not required.
TYM'S ELECTRIC	Contemporary	Bowl	0.65 kW	—	Al, Bl	Spiral type element and adjustable reflector.
	Sunglo	Portable firebar	½ & 1½ kW	10 × 11 × 6½	Go, G, Br, Pr	Embodies a convector construction.
	Sunshine	Portable reflector	½, 1, 1½ & 2 kW	13 × 10 × 7	Br, Bl, Bl & Go, Pr	Horizontal reflector with pencil type elements.

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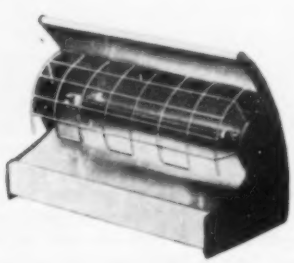
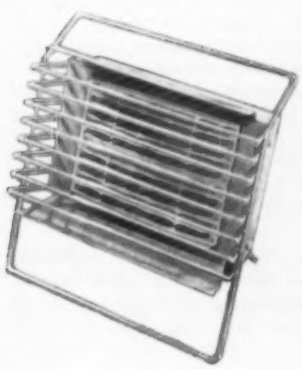


Model F104
British National Electrics Ltd.



Sunhouse No. 148
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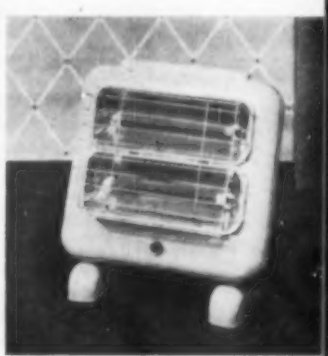


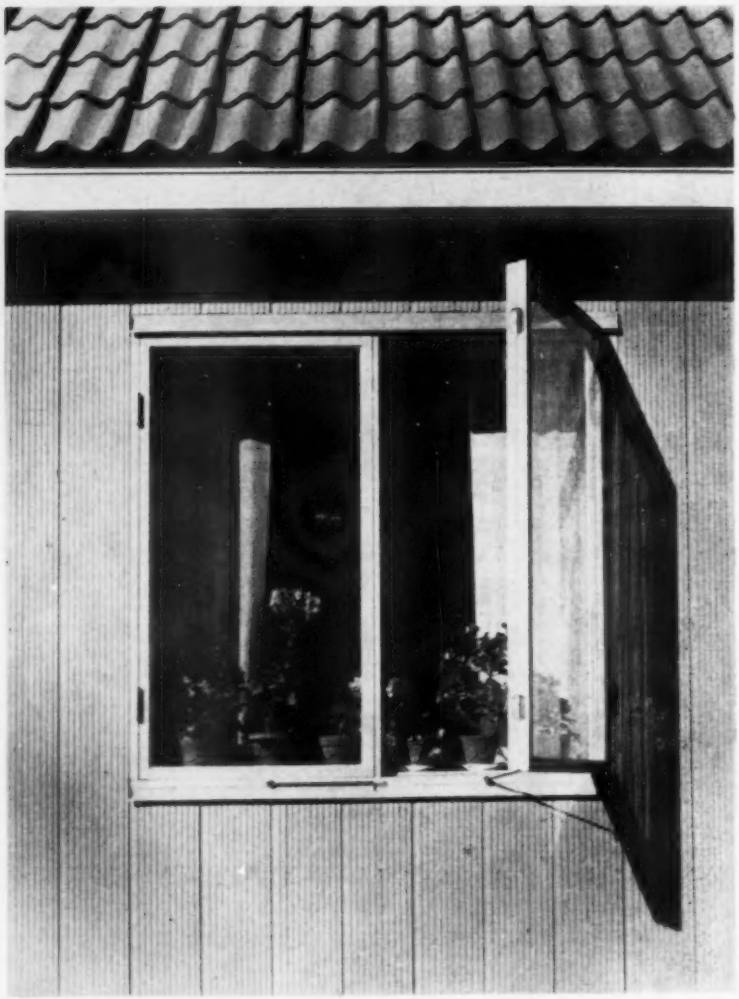
Jewel, 2 kW
Premier Electric Heaters

POINTS FROM PAPERS

Modular Coordination—an industrial tool

from a paper read before the Modular Society on 15 November, at the R.I.B.A., by

LENNART BERGVALL,
architect S.A.R.



Wall and window detail of a small house built in a system designed by the author.

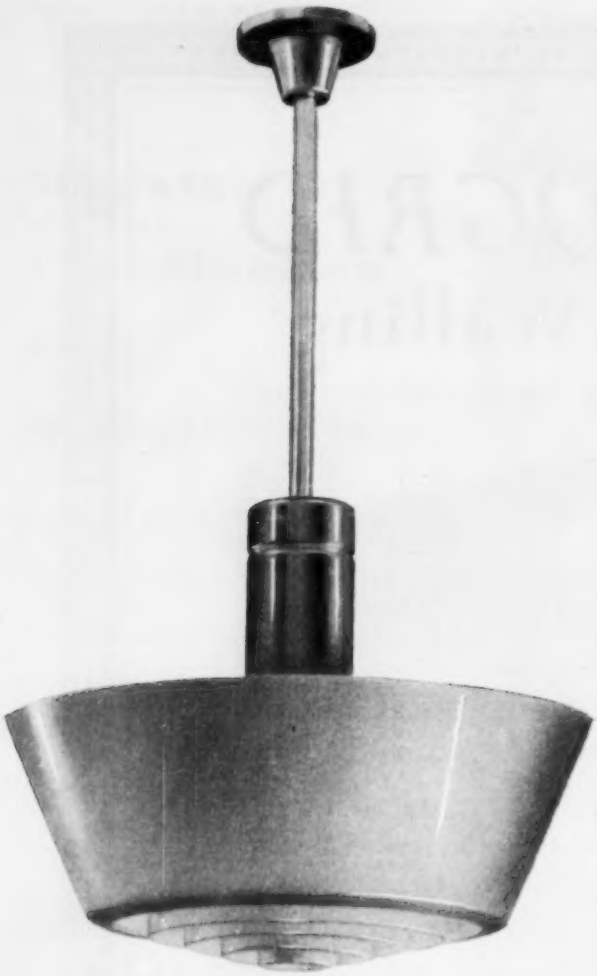
WHAT is really the purpose of modular coordination? You may feel that this is a very elementary question to raise in an assembly like this, but I think that much of the discussion around various details in modular coordination is due to the fact that we have not answered a number of such elementary questions clearly enough. It is important to keep in mind that modular coordination has been created as a natural—and necessary—complement to standardization. Consequently, the very purpose of modular coordination is exactly the same as that of standardization, namely *to promote industrial mass production*. It should be clearly kept in mind that the standardization is an inevitable consequence of industrial production—handicraft, on the other hand, has no use for it.

Standardization promotes this industrial production mainly by concentrating the demands to a limited number of types and sizes, thus permitting or facilitating large-scale production, production for stock, or automatic production.

The various standardized, industrially produced building parts, however, must fit into each other on the building site, and must be made so that they can do so in a number of different combinations, *which cannot be determined in advance*, if any freedom is to be left for creative architecture. This is where modular coordination comes in. The factory-made units must be fitted into a general dimensional system with a common denominator, the module The object of modular coordination must then be, firstly, to allow advanced standardization and industrialization of the production of building parts, and secondly to accelerate the removal of the production from the building site with its unfavourable working conditions to the industry of building materials and parts, where conditions are more suitable for rational production. That is why modular coordination is basicly an industrial tool.

But why do we want this industrial production of the houses? For me the answer is very clearly this: because it is the only way to get cheaper homes so that once we will find the building industry self-supporting and not subsidized, as is now the case in nearly all countries. It is not for the benefit of the architect, the engineer or the builder that we have worked for years for modular coordination, but it is in order to give a contribution to solve the enormous problem of housing in the postwar world. It is still too early to forget what Le Corbusier said already in the twenties: "L'architecture ou revolution", architecture or revolution.

The answer to many of the modular questions depends



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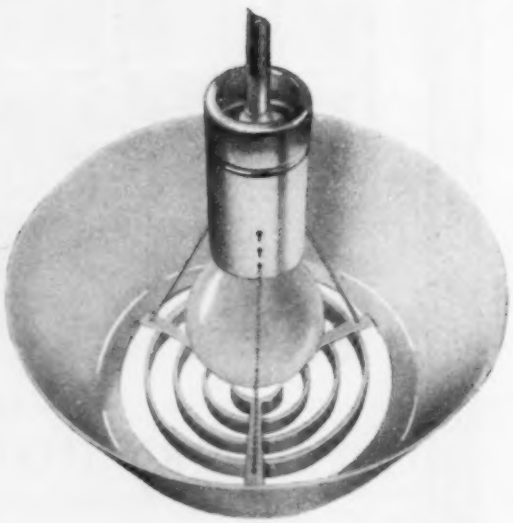

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on our basic conception of modular coordination. For us, modular coordination means that all linkage dimensions of the building parts and all room dimensions are multiples of our basic unit, *the module*.

This means first that modular coordination deals only with linkage dimensions and does not try to restrict the choice of other dimensions such as e.g. table height. Therefore, also anthropometric datas are of little significance in modular coordination. As for Le Corbusiers attempt to base a whole system of "modulor" coordination on so called "human dimensions", I like to ask "What is really 'human dimensions' "? If we try to use the human height as the dimensional basis, should we use the average height of a tall American or of a tiny little French girl? Also, I fail to see that one foot (30, 5cm) is a "human dimension", whereas 3dm (30cm) should not be so.

This conception of modular coordination also means that the architect shall in principle have all the freedom, that is offered by a grid, with *the module* as meshwidth. This is the reason why the module can't be too large; the restrictions in design would then be intolerable both from architectural and economic point of view. It's also the reason why it's necessary to stick to the conception of a *basic* module, although for some items (e.g. piping) we need to use half modules and it could be said with some reason that in such a case its half the module, which is the real basic dimension. The size of the basic module, the meshwidth of the grid, determines and limits the room dimensions that must be forseen when we design for instance a system for prefab walls. The halfmodule is not taken into account there, but should only be used as an aid to make some special items to fit with the basic modular grid.

In connection with this I should like to make a clear distinction between the basic module, that is *the module*, on one side and unit size, planning grid and preferred dimensions with series on the other side.

As for *unit sizes*, we often hear that producers of prefab concrete wall units declare that about 4 feet is the economic width of their panels, so any economic use of their system requires that the plans are designed on a 4 foot grid. But if the enormous waste of space that this involves is taken into account we will see we can't afford to go on with it. It simply means, as I said before, that the dimensions of every unit (home, flat etc.) will in average be unnecessarily increased with half the meshwidth in both directions, that is 2 feet. What does this mean for a home 30 × 25 feet? An increase in dimensions to 32 × 27 feet means an increase in space of 115 sq ft, representing at least £2-300. Therefore the size of any planning grid cannot be determined by the prefab units; these must be designed to serve any good plan on the basic modular grid, if they shall be used *generally* and not only for a special kind of buildings (e.g. classroom wings in schools) or for a special project. But this does not mean, of course, that all prefab units should be one module wide, nor does it mean that the manufacturers have to abandon their 4 feet as the basic unit size. But they must be prepared to add to these units a small number of what I should like to call "change coins", that is smaller units, which in addition to the basic units can form any modular dimensions. If the sizes of these extra units are carefully chosen, they will only be a few per cent of the total number of units and need by no means affect the rational production of the larger basic units. This problem would easily be solved, if as much skill and imagination were devoted to it, as has been spent on creating new prefab systems. And only so can the growing prefab industry serve both architecture and economy.

The *planning grid* can be a very useful tool for a good and rational design of different kind of buildings but only when it is a servant and not a master. Therefore the size of the meshes in the planning grid should be determined by the functional requirements of the building and not—as I said before—by the unit size of any prefab system. The design of our homes must be guided by our own wishes and dreams and not by the clumsiness of our technique.

This means, that for dwellings no larger planning grid than the basic modular one is adequate. Because the module should just be chosen as the meshwidth of the largest grid, which—from architectural point of view—is generally acceptable for all kind of buildings. That is the reason, that in the modular research work in our country, leading to the 1dm module, we never seriously considered anything larger than 6in for a module.

Now, as a matter of fact, dwellings allow less restrictions in design, than any other kind of buildings, because there the most complex functions have to be satisfied within a most limited area. But for other types of buildings a larger planning grid may prove rather valuable. For big industrial buildings a large planning module of something like 8 feet may be right, because then the economic effect of the restrictions in design may easily be balanced by the gain from standardization of roof constructions and so forth. In the same way a planning module of 40 inches or of 8 feet might be a valuable tool for a rational design of school buildings—or properly speaking the classroom wings in school buildings. For other parts of a school that planning module may well be too large. An example may prove that. At an excursion in connection with an E.P.A. conference in Paris we were shown a school, which was totally designed on a planning grid of 1,75 metre—5ft 10in—considered as ideal for the classrooms after a careful investigation. But this

Factory pre-manufacture of wiring octopus. Note the bench is marked in units of the module.

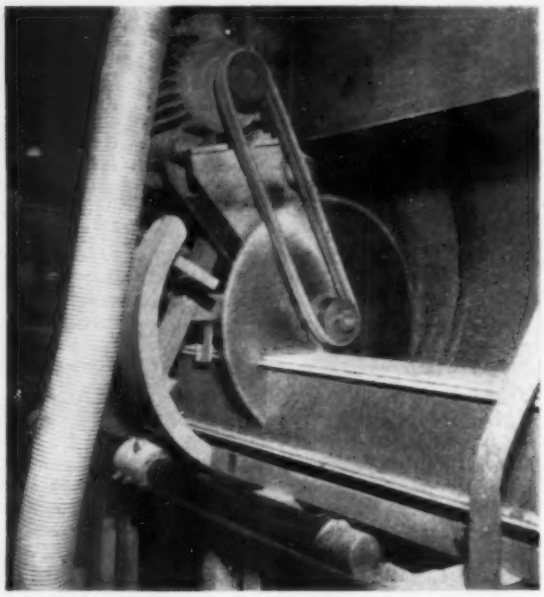
Modular Coordination, an industrial tool

school contained a lot of other rooms dwellings for the staff etc., and for these it had been impossible to make a good and economic design within that large grid. The same may hold true for, say, a hospital, where one planning grid may be ideal for the bed wings, another one for office and dwelling wings. Therefore we have to foresee a number of different planning grids for different kinds of buildings. But for a full economic effect these different planning modules have to be standardized, and preferably on an international scale.

The general industrial standardization has long since used *series* of *preferred dimensions* to allow a reasonable choice of sizes. For this purpose industrial standards are usually based upon geometric series, the Renard series, which make it possible to cover a certain range of size with the least possible number of standard units. But this is used as a tool for standardization, being the servant and not the master. When f.i. functional studies give a clear indication that sizes outside the series are very highly frequent, it may be considered to abandon the Renard series. It's life itself that shall be satisfied by standardization, not an abstract mathematical principle. It would be wise to consider—as very often where technical matters are concerned—that it's not the mathematics that are complicated, it's life itself. Even a very complicated formula or series is only a very, very rough approximation of the far more complicated realities.

Also in building standardization, the use of series may be very helpful for choosing the right sizes for standardization. Even if the arithmetic serie formed by all multiples of the module limits the number of sizes to a certain extent, this is not at all sufficient. To make a rational choice some kind of series is necessary, something corresponding to the Renard series, only that we must add to them still another condition, that of interchangeability. Therefore the problem of series is more important and far more complicated in the building industry than in the general industrial standardization. But the importance of this problem would probably not have been duly recognized, hadn't it been for the excellent and thorough studies of this subject, which have been carried out so penetratingly by our friends Mr. Bill Allen of the Building Research Station and Mr. Bruce Martin of the British Standards. Even if much is yet to be done in this particular field of standardization, I am grateful that they have drawn our attention to the importance of this subject. But it is to be noticed that it's rather a question of standardization and general coordination, than one of modular coordination, because from the definition of the module, it follows as self evident that all linkage dimensions of a standardized building part should be multiples of the module. The purpose of the series again, is only to help us to select the right multiples. However, I don't intend to deal here more in detail with the different alternatives for such series; they have been discussed most thoroughly in this society before. I only like to draw your attention to the fact, that while all the series considered have been geometric series, just as the Renard series, building itself is arithmetic in character. To build is just to create, materially, with our hands an arithmetic serie.

But geometric series have been introduced in the building industry long before, as we all know, already by the ancient Greeks and Romans, not for technical reasons though, because there was no technical need for it, but for purely aesthetical reasons. This has recently been reintroduced by Le Corbusier with his "Modular system", which I mentioned before. Le Corbusier himself claims that the use of his modulor series ensures harmonic proportions of our buildings in a much better way, than "face" design. I am not going to argue about that. But suppose for a moment that this were true, how would it affect our views on modular coordination? Not at all. It just gives us another tool to select those multiples of the module that we believe will ensure harmony in design.



Mechanization in the factory, a moving circular saw cuts an endless strip into modular units, produced automatically.

I think I can sum up all this by saying that there is no contradiction between the arithmetic serie formed by all the multiples of the module on one side and the geometric series on the other, whether Renard Series, Le Corbusiers' modulor series or the "Allen series", if I may call them so, as long as they are all used as tools for a better selection of multiples of the module, the basic module that is.

I do not intend to deal here with the intricate question of the placing of the grid in general. I will only draw your attention to some facts, correlated to my attempt to clarify our basic conception of modular coordination. There has been, in this country and in most others too, a lot of discussion whether the grid lines should coincide with the surface of the walls—at least theoretically—or with the centres of the walls. But, as long as we stick to a real modular design, where the thickness of the interior walls are equal to the module—or a multiple of it—we will find that both principles will result in the same design, the same room dimensions and position of the units. Also we will find that it is not at all necessary that the joints between the units coincide with the grid. I will show later how this has been applied to a strictly modular prefab system with very good result. Our conclusion in Sweden therefore is, that so far we feel the simplest and most natural way to place grid—which is the basic planning grid—is in coincidence with the wall surfaces. However, this need not prevent the builder and the architect from using the wall centres for indicating the position of the walls, just as is now tradition in most

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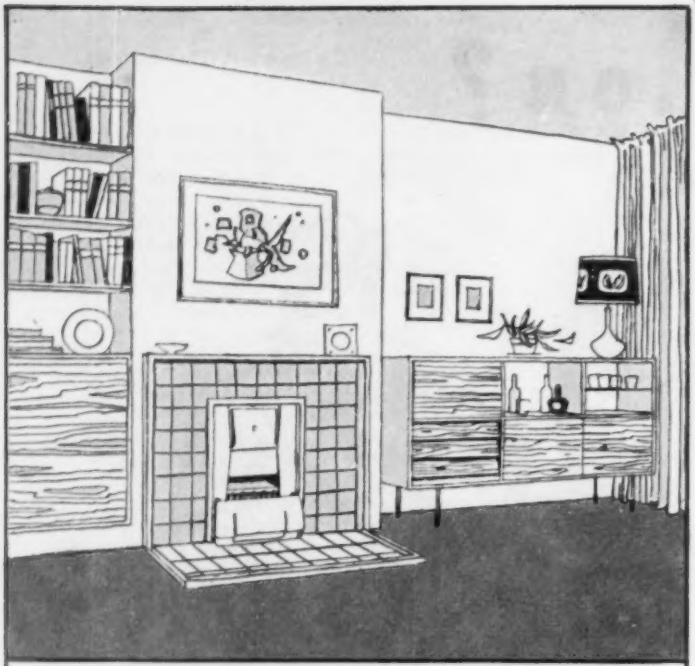

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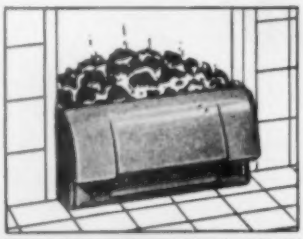
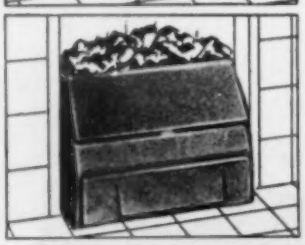
continuous burning fire with boiler flue set

Choice of two detachable extension pieces



1. Standard. With extension piece down, the fire burns more efficiently and with less trouble than any ordinary open fire.

With extension piece up, the fire will stay alight for ten hours or more. It can be left to burn unattended and no live fuel can possibly fall out on to the hearth.



2. Trivet. If desired the combined hook-on trivet and extension piece, as illustrated, can be supplied instead of the standard fitment.

The combined hook-on trivet and extension piece is shown in position for overnight burning.

If the boiler is not used to provide domestic hot water, 45 sq. ft. of radiation surface (including unlagged piping) can be heated.

Hot Water System. The recommended size of cylinder is 30 gallons (direct or indirect).

The No. 25 Lowburn, a continuous burning fire without boiler, is also available. For further information about the No. 50 or 25 Lowburn Fires, write to the Housing Division of:

NOTES:

2 inches lower than average continuous burning fire of this type — and very pleasing to the eye. Low costs — to buy, to install, to run.

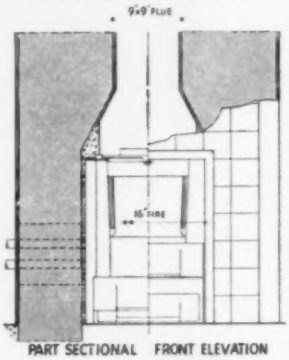
The No. 50 Lowburn Fire is an approved appliance. It burns for 10 hours without attention on all recommended fuels, including coke.

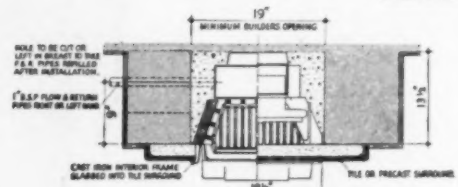
The difference the low front makes

The maximum radiant heat is directed at the lowest possible level.

It is economical because a few lumps of fuel—not a whole scuttle full—are enough to give a cheerful blaze.

INSTALLATION DETAILS





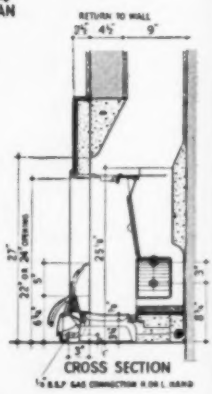
SPECIFICATION:

Vitreous enamel cast iron front with extension for overnight burning. Firebrick lined fire box, removable bottom grate and adjustable air inlet in fire front.

Wrought welded or copper boiler with 1 in. side tappings right or left hand, and cast iron self-contained boiler flue and damper. Operating tool and mild steel ashpan. With or without gas ignition burner.

The unit can be supplied prepared for, but without boiler.

Colours. — Cream Mottle or Black, Alisheen Black, Bramble, Bronze or Copper.



Gas Ignition Burner Connections: ¼ in. B.S.P. on either hand.

Fuel Consumption:

Average figures are :—

Winter Conditions	1½ to 1¾ cwt. per week
Spring and Autumn	¾ to 1 cwt. per week
Minimum or overnight rate	½ to ⅝ lb. per hour

Space Heating Capacity: Full heating up to 1,500 cu. ft.

Boiler Output: Maintainable maximum 9,000 B.Th.U. per hour. Provided the system is compact the boiler can heat a towel rail in addition to supplying domestic hot water.

ALLIED IRONFOUNDERS LTD

Makers of cookers, boilers, fires and baths

28 Brook Street, London, W.1.

countries, because modular grid is one thing, the measures on the drawings for the builder another one.

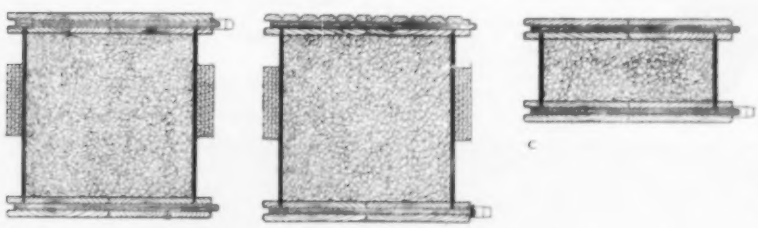
I have hitherto not dealt with the size of the module other than in principle. Of course, as you may know, we in Sweden have decided years ago on the 1dm module, and the report at the last E.P.A. meeting in Munich was strongly in favour of a 1dm module. However, I realize quite well, that here this question is much more intricate, because of your foot-inch system, and it takes much more of knowledge of the situation than I have, to deal with the subject from this point of view. I should like, however, to throw some light on the question of what influence the brick dimension may be allowed to have in this respect. In the imagination of most laymen and—unfortunately—even in that of many experts a house still consists mainly of floors, walls, ceilings and roof, just as it always has done—and in addition to that some new items of secondary importance, installations etc. But this conception of a building is outmoded and inadequate in our time. Now the structure itself represents only some 30 per cent of the total building cost, and of these about one-third may represent the brick walls in a so-called brick building. So actually, when we consider to let the problem of the brick dimensions hold back modular coordination, we allow a building part, representing some 10 per cent of the total, prevent us from using an excellent tool to rationalize all the other parts representing some 90 per cent. I know there *are* complications but it's very useful to consider what importance the very structural material really has nowadays compared with the rest of the building.

As we adopted modular coordination, on a 1dm base, in Sweden several years ago, you may well ask, what practical results and experiences we have got. As we have considered modular coordination mainly as an industrial tool, it has been of special interest for the manufacturers of building materials. Against that background it may be worth mentioning that the "Modular Investigation" which opened up the building trade in our country for modular coordination was wholly financed by the National Association of Manufacturers. In full consequence with this conception of modular coordination, we found it—after a time of somewhat confused discussions, which seem inevitable, when you try to introduce modular co-ordination—to be the best policy not to start with forcing the architects into a rather unknown field of modular design, but instead use modular coordination as a tool for the standardization of building materials and parts, so that gradually we should get a stock of modular components, thus making architects and builders conscious of modular coordination and all the questions of tolerances and so forth that go with it. So now we feel ready to try to give the architects and builders a detailed instruction in modular design and encourage them to really go ahead with it. But to have a firm foundation for that, we will—co-ordinated with the E.P.A. work—design and build two absolutely modular houses, one home in wood frame construction and one prefab concrete apartment house. First after we have got all experiences from that experiment do we feel ready to launch modular coordination on a wide scale, in spite of the fact, that we have already about 100 of the most important building components modularly standardized, the brick among them, although that standard is rather new, because it has taken a long time for the brick industry to convince themselves. But here—as in so many cases—the finally deciding factor has been a desire not to be left behind in the technical evolution. And very rightly so, because the time is not far away, when only modular building components are adequate and those, who have early made themselves familiar with the problems involved and are prepared to meet the new age in building, will then have a very definite advantage, compared with non modular competing materials.

We have also found that this has been the best, if not the only possible way, to make the ordinary people in the building industry acquainted with the problems and principles of tolerances, which at least in our country, was completely new to them. But when standard after standard is released and brought into work, where all necessary dimensions are given with an adequate tolerance, they gradually grow familiar with it. Of course we all know that the building industry for many reasons must work with larger tolerances, than f.i. the mechanical industry, but that is no reason at all to abandon the use of them, rather the contrary.

I said that our standards are modular, but that does not necessarily mean, that all dimensions are a multiple of the module, but that all linkage dimensions are properly coordinated with the modular dimensions. Take f.i. tubes for electric wiring. These are kept in storage, standing on end, so that the lower end of it will always be destroyed about one inch from the end, and that part is supposed to be cut on the site. So the standard length of it is not 30 modules but 30 modules plus about an inch.

You may also ask what economy we have found in modular coordination. Well, I think that question is impossible to answer because how could we separate the influence on the building costs of modular standardization from that of rationalization in general, rising price level, rising dwelling standard and so forth? Those who want to be dead sure on each penny before they dare to jump into modular coordination will simply miss the point. Before every new step in the technical evolution you will find that technical and scientific research can guide you to a certain point, but beyond that you must dare to rely on intuition. All important inventions were created by such a combination of scientific skill, intuition and faith. And modular coordination is no exception. Most of us have seen building sites so often, that we have almost begun to accept the hopeless mess and disorder there compared with a well organized factory. This is not to say that our builders should not do the best of a given situation; it's the system, not the builders that is wrong. And who can foresee the economic gains of the miracle of order in building industry?



c

Sections through floor, wall and partition units of the A B Bostadsforskning system.

MOSAICS

PLANT
SPRAYING EQUIPMENT
E15/5

This two-gallon pressure paint container is the latest addition to the products of Alfred Bullows & Sons Ltd., of Long Street, Walsall, Staffs. The shell of the container, as well as the cover, is of high tensile aluminium alloy diecasting. The cover is held in position by F.S. "C" clamps and handscrews for speedy removal. The feed pipe is of duralumin. All parts in contact with paint are of aluminium alloy or stainless steel. Container is available with or without pressure reducing valve unit, which is flange mounted on the cover and houses the shrouded pressure gauge. It has a built in safety valve with easing ring, so that it is used as a blow off valve and is non-adjustable. Container also available with galvanised M.S. shell for use with materials corrosive to aluminium. Maximum working pressure of containers: 50lbs per sq in. Hydraulically tested to 100 lbs per sq in.

FITTINGS
GAS COOKERS
C6/11

The new "Pixie" cooker by Sidney Flavel & Co. Ltd., of Eagle Foundry, Leamington Spa has been designed to cater for the requirements of two or three people. Both grill and oven doors drop to form plate rests and there is incorporated an American style combined grill and dry-fry griddle. An extra boiling burner can be supplied in place of the grill-griddle. The gas taps are of the "press and turn" safety type. Accessories: Oven shelf, cake tray, meat tin, grill pad and grid, cooking chart. Measurements: height 20in x width 17in x depth 16in. Weight: 60 lbs. Finish: Cream or white vitreous enamel.

PLANT
FACTORY EQUIPMENT
E14/16

A scrubbing and drying machine has just been introduced by the Cowlard Floor Maintenance Machine Division of Matling Ltd., of Park Lane, Wolverhampton. Known as the Saturn II, this machine performs two functions simultaneously, scrubbing away the dirt and then lifting it from the surface of the floor so that it is left clean and dry. It is battery-powered and includes two galvanised tanks, one for water and detergent and the other for sludge; a high speed motorised air extruder running at about 14 000 r.p.m.; a continuously rated 1 h.p. brush drive motor running at approximately 2,000 r.p.m.; lifting jacks and the Microjusto wheel control. The equipment is powered by a 24-volt Exide-Ironclad traction battery with a capacity of 175Ah. The Matling traction unit is driven by a constant speed 24-volt motor. Transmission is effected through a heavy duty single-plate clutch and gearbox having three forward speeds and reverse.

PLANT
OFFICE
EQUIPMENT
E12/16

A new spirit duplicating machine specially designed to provide economic working for offices and establishments which have a need of short runs has been introduced by Byron Business Machines, of Arnold Road, Nottingham. Known as the Polycarp Spirit Duplicator, the new machine requires neither ink nor stencil and gives both clean and economic working. Up to 200 copies can be obtained from each master sheet if it is operated efficiently. It also provides for multi-coloured reproductions, graphs and illustrations and either quarto or foolscap size paper can be used.

INDUSTRIAL NOTES

● The 75th edition of the "Statistical Abstract for the Commonwealth and Sterling Area" was published on December 5, for the Board of Trade by Her Majesty's Stationery Office, Kingsway, W.C.2, and branches, price 17s. 6d. This publication brings together in the same volume the basic trade statistics of Commonwealth countries up to 1954.

● Owing to the growth in the size of the Electrical Engineers' Exhibition, it has been necessary to obtain larger premises to house the Exhibition Company. The registered address will still remain as before but all correspondence and interviews will be carried out at 6 Museum House, 25 Museum Street, London, W.C.1. The telephone number, Museum 3450 remains unchanged.

● The second Hardware Trades Fair, which will be held from the 20th-24th February, 1956, will be twice the size of the first one, and will occupy both the Royal Horticultural Halls, Westminster.

● Home Heating Ltd., designers of central heating for homes, offer a heating service which embraces small and large dwellings, whole estates or blocks of flats, and specialise in selecting the most advanced and efficient system or combination of appliances for each individual need and utilising any fuel. The address is 28 Baker Street, London, W.1. Telephone Welbeck 4949.

● The sales and administration departments of Messrs. Ewart & Son Ltd., manufacturers of gas water heaters, have moved to 255 North Circular Road, Neasden, N.W.10. Telephone: Willesden 1234.

● Vacuum Oil Company Ltd. announce that on the 1st December, 1955, the name of the company was changed to Mobil Oil Company Ltd. There will be no change in the ownership, management or policy of the company.

OBITUARY

● We regret to record the death, on December 2, of Colonel S. M. MacGuire, O.B.E., M.C., aged 63, Chief Public Relations Officer, George Wimpey and Company Limited. Colonel MacGuire joined the company in 1935, and became Public Relations Officer in 1945.

● Mr. Arthur Dawson, Managing Director of Celotex Limited, passed away suddenly on Monday, November 21. Mr. Dawson joined the company as secretary in 1937.

● The British Vacuum Cleaner and Engineering Co. Ltd. have announced the passing of Mr. Seymour Booth, a Director for many years.

CORRECTION

● In the issue of November 17, page 634, the top line of column 2 should read: "Calorex" sheet glass for heat absorption. Also, on page 641 the weight of "Trofdek" should read as 2/3lbs/sq ft.

It's here!

"PLACAROL" REG.

THE REVOLUTIONARY FLUSH DOOR CORE

Consisting of hundreds of wood spirals bonded by their edges in an immovable unity with the plywood facings, the **"PLACAROL"** core has a strength and stability hitherto unobtainable in semi-solid flush doors.

The "PLACAROL" core offers these unique advantages—

- **It's *all* timber—a traditional material in a new form.**
- **Uniform support of the door facings prevents surface undulation.**
- **Much greater strength with a saving in weight.**
- **Complete stability and rigidity.**
- **Vastly improved quality and dependability.**

HILLS

Exclusive to

"DURADOR" & "POPULAR"

INTERIOR FLUSH DOORS

Hills "DURADOR" and "POPULAR" flush doors will shortly be available with the "PLACAROL" core, offering the same well known quality and finish plus the added advantages of the "PLACAROL" core. WRITE FOR FULL DETAILS NOW!

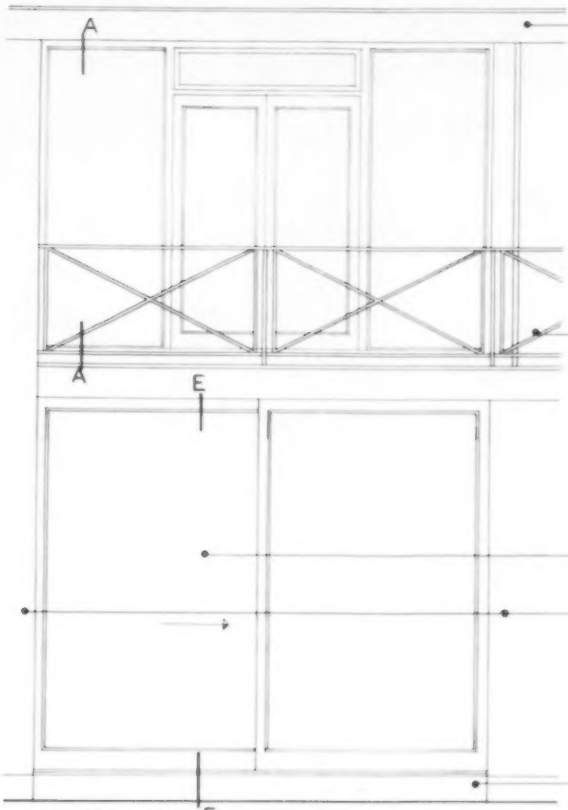
F. HILLS & SONS LTD.

STOCKTON-ON-TEES. Telephone: 67141.

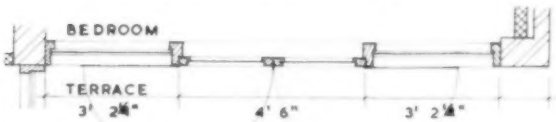
London Branch Office: 28, Victoria Street, Westminster, S.W.1. Telephone: ABBey 6542.

London Depot:
Stocks of Hills doors are held for early delivery to Southern Area customers.

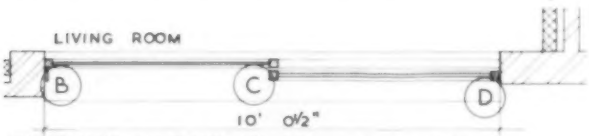
G★★



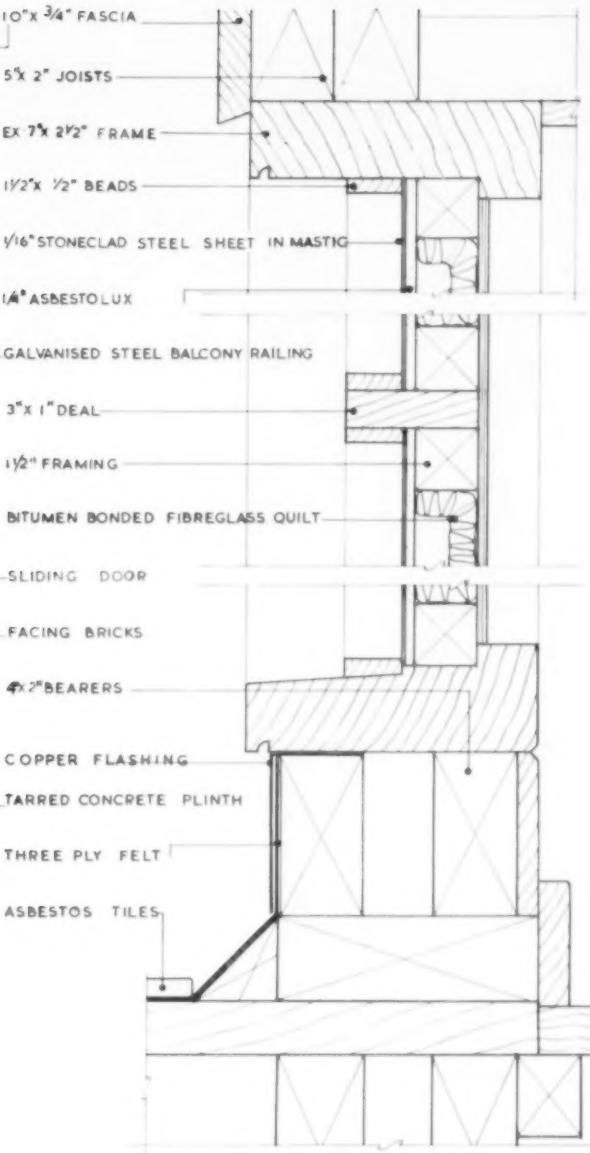
ELEVATION • 1/4" TO 1'0"



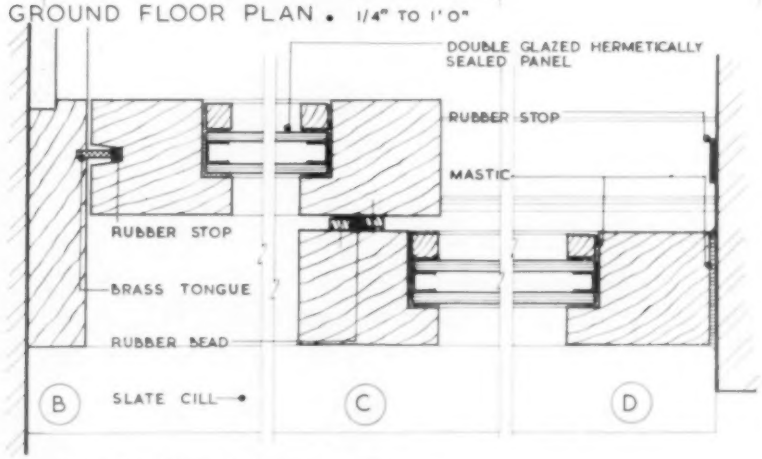
FIRST FLOOR PLAN



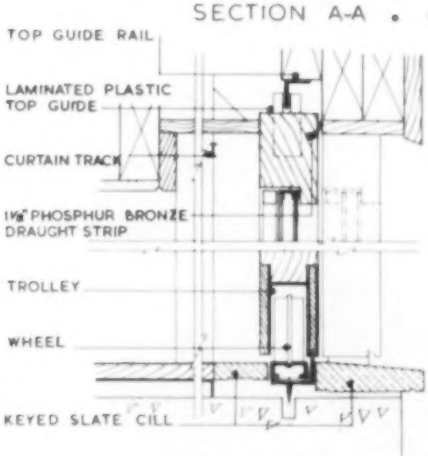
GROUND FLOOR PLAN • 1/4" TO 1'0"



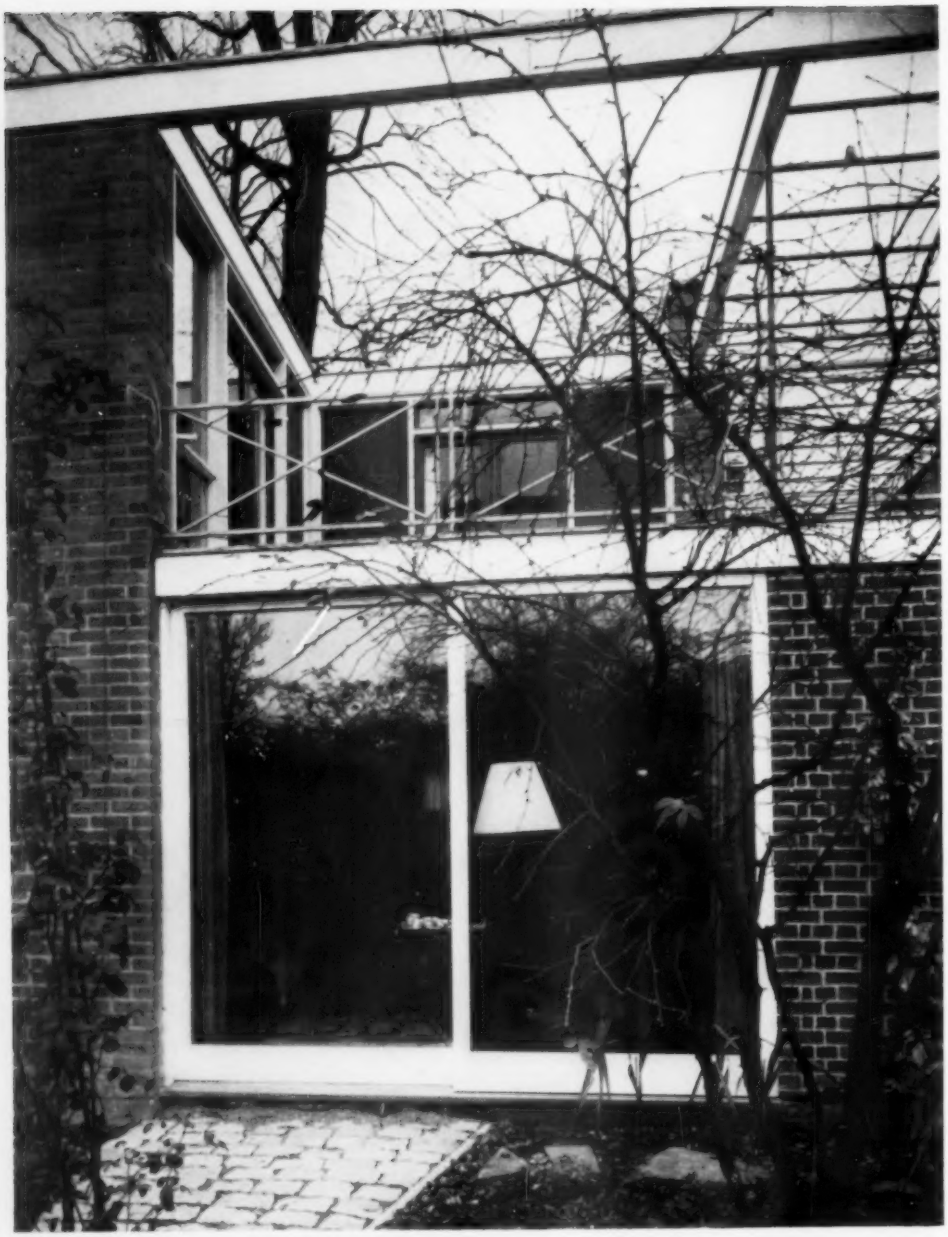
SECTION A-A • 1/4 F.S.



PLAN DETAILS • 1/4 F.S.



SECTION E-E



LIVING & BEDROOM DOORS, HOUSE, CANNON LANE, N.W.3

ARCHITECT: ALEXANDER GIBSON

CONTRACT • NEWS •

*Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate: (a) type of work (b) address for application. Where no town is stated in the address it is the same as the locality given in the heading (c) deposit (d) last date of application (e) last date and time for submission of tenders. Full details of contracts marked * are given in the advertisement section.*

OPEN

BUILDING

ASHBOURNE R.C. (a) Erection and completion of four houses and eight houses at Hulland Ward and a block of four terrace houses at Roston, as separate contracts. (b) A. Percy Taylor, 59, Chapel Street, Belper, Derbyshire. (c) 2gns. each contract. (e) January 3.

BARNSLEY B.C. (a) Erection of a secondary technical school at Broadway. (b) Director of Education, Education Department, Town Hall, together with evidence of work on similar types of buildings. (d) December 17.

BRIGHTON B.C. (a) Carrying out adaptations at Finsbury Road School. (b) Borough Engineer, 26-30, King's Road. (c) 2gns. (e) January 9.

COOKHAM R.C. (a) Erection and completion of 2 shops and 23 garages in blocks, with ancillary site works, at Choseley Road, Knowl Hill. (b) Council's Engineer, Council Offices, Oaklands, 1, Bath Road, Maidenhead. (c) 2gns. (e) December 28.

COOKHAM R.C. (a) Erection and completion of one block of six flats and 16 houses in blocks, at Shepherds Close, Hurley. (b) Council's Engineer, Council Offices, Oaklands, 1, Bath Road, Maidenhead. (c) 2gns. (e) December 28.

EAST ANGLIAN REGIONAL HOSPITAL BOARD (a) Applications are invited from competent firms of builders and contractors for inclusion in the approved list of contractors capable of executing new works and/or alterations to existing hospital properties at Cambridgeshire, Isle of Ely, Norfolk, Huntingdonshire, East and West Suffolk, Soke of Peterborough and parts of South Lincoln and North Essex. The list is sub-divided into the following categories: Category 1 — work costing over £100 and up to £10,000. Category 2 — work costing over £10,000 and up to £25,000. Category 3 — work costing over £25,000 and up to £50,000. Category 4 — work costing over £50,000. (b) Board's Architect, 33, Parkside, Cambridge. (d) December 17.

ESSEX C.C. (a) Erection of additional classroom and hutted practical room at Earls Colne Grammar School. Approx. cost £7,000. (b) County Architect, County Hall, Chelmsford. (d) December 17.

ESSEX C.C. (a) Erection of additional classrooms, etc., at Latchington C. of E. School. Approx. cost £9,750. (b) County Architect, County Hall, Chelmsford. (d) December 17.

ESSEX C.C. (a) Erection of Colchester High School for Girls. Approx. cost £153,000. (b) County Architect, County Hall, Chelmsford. (d) December 17.

HEYWOOD B.C. (a) Supply and erection of a prefabricated storage building, 30ft x 45ft of steel truss construction with asbestos cladding. (b) Borough Engineer, Municipal Buildings. (c) 1gn. (e) January 6.

KINGSTON UPON HULL C.C. (a) Erection of 40 garages at Salthouse Road, Bellfield Avenue and Bilton Grange estates. (b) City Architect, Council Offices. (c) 1gn. (e) December 30.

LONDON — CHINGFORD B.C. (a) Erection of 8 garages at Boardmar Avenue and 19 garages at Antlers Hill North, on Yardley Lane estate. (b) Borough Engineer, Town Hall, E.4. (c) 2gns. (e) January 5.

LONDON — TOTTENHAM B.C. (a) (1) Erection of the Lord Morrison Hall, Chesnut Road, N.17, and/or (2) additions and alterations to Central Library, High Road, N.17. (b) Borough Engineer, Town Hall, N.15. (c) 2gns. each contract. (d) (1) December 19, (2) December 31.

LONDON — WALTHAMSTOW B.C. (a) Erection of 54 flats in three-storey blocks at the sites of Nos. 23-73, Valentin Road, No. 13, Back Road and land adjoining and Nos. 21-25, Back Road and land adjoining. (b) Borough Architect, Town Hall, E.17. (c) 2gns. (e) January 11.

MAIDENHEAD B.C. (a) Contract No. 4J. Erection of 20 houses at Spencers estate. (b) Borough Engineer, 14, Craufurd Rise. (c) 2gns. (e) January 11.

MANCHESTER C.C. (a) Contract No. approx. 161 houses and 36 maisonnettes and flats at Vernon Road and High Bent Lane, Bredbury. (b) Director of Housing, Town Hall. (e) December 30.

MONTGOMERYSHIRE EDUCATION AUTHORITY. (a) Carrying out alterations and adaptations at Bwlchycibau Primary School, and Llanerfyl Primary School. (b) Director of Education, Education Offices, Newtown. (e) December 29.

NEWCASTLE UPON TYNE C.C. (a) Erection of a public convenience in Leazes Park. (b) City Architect, 18, Cloth Market. (e) January 10.

N. IRELAND — BELFAST C.C. (a) Erection of 240 dwellings in the form of ten storey flats on a site at Annandale Embankment. (b) Town Clerk, City Hall, P.O. Box 234, together with details of experience in this class of building work, and organisation and plant available. (d) December 29.

N. IRELAND — GILFORD. (a) Erection and completion of St. John's Primary School, for the Rev. J. J. Lennon. (b) W. H. McEvoy, Ulster Bank Chambers, 73, May Street, Belfast. (c) 5gns. by cheque. (e) January 5.

N. IRELAND — STRABANE (a) Erection and completion of a new voluntary intermediate school for boys at Melmount, for Rev. George Faulkner, Melmount. (b) W. H. McEvoy, 73, May Street, Belfast. (c) £26 5s. (e) December 30.

POOLE B.C. (a) Erection of a block of four classrooms on two floors together with sanitary and cloakroom accommodation at Broadstone junior and infants schools. (b) Borough Engineer, Municipal Offices. (c) 2gns., by cheque, payable to Corporation. (e) January 17.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. (a) Alterations to children's ward at Rochdale Infirmary. (b) Messrs. Moir and Bateman, Prudential Buildings, South Parade. (e) January 20.

SCOTLAND — KIRKCALDY ROYAL BURGH COUNCIL (a) Erection of 20 flats and 1 cottage at Hendry's Wynd and Heggie's Wynd and 8 maisonnettes and 8 flats at Links Street. All or separate trades. (b) James Gentles and Son, Osborne House. (e) December 29.

SCOTLAND — KIRKCALDY ROYAL BURGH COUNCIL (a) Erection of 23 cottages on Gap sites. All or separate trades. (b) James Gentles and Son, Osborne House. (e) December 29.

SOMERSET C.C. (a) Erection of a home for old people at Wells. (b) County Architect, Park Street, Taunton, with an assurance that applicant has necessary financial and material resources and organisation to undertake the work. (c) 2gns.. (d) December 19.

WALLSEND B.C. (a) Extending the dressing accommodation at the Public Bath, Vine Street. (b) Borough Surveyor, Town Hall. (c) 2gns. (d) December 17.

WELWYN PARISH COUNCIL. (a) Erection of a recreation pavilion and shelter on the Welwyn Playing Fields. (b) Council's Surveyor, Welwyn Rural Council, Council Offices, 3, By-Pass Road. (e) January 12.

PLACED

Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. † denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.

BETHNAL GREEN B.C. (1) 112 flats, 27 shops, etc. (2) Roman Road. (3) Gee, Walker and Slater Ltd., 100, Park Lane, London, W.1. (4) £411,000.

BRENTWOOD U.D.C. (1) Civic offices. (3) A. A. Stuart (Glasgow) Ltd., 108, Victoria Street, London, S.W.1. (4) £117,500.

WARWICKSHIRE C.C. (1) Further instalment of Mid-Warwickshire College of Further Education. (3) C. Bryant and Son, Ltd., Whitmore Road, Birmingham. (4) £124,875. (1) Sharman Cross Secondary School. (2) Solihull. (3) C. Bryant and Son, Ltd., Birmingham. (4) £142,301. (1) St. Marie's Secondary School. (2) Rugby. (3) Bosworth and Wakeford Ltd., New Street, Daventry. (4) £73,834. (1) Rebuilding C.E. junior school. (2) Bidford-on-Avon. (3) W. A. Cox (Evesham) Ltd., Abbey Gate, Evesham. (4) £15,642.

FARNWORTH B.C. (1) 70 houses. (2) Plodder Lane. (3) W. Lionel Gray (1933) Ltd., Hospital Road, Darley, Farnworth, Lancs. (4) £101,150.

REDDITCH U.D.C. (1) 200 houses. (2) Studley Road. (3) C. Bryant and Son Ltd., Whitmore Road, Birmingham. (4) £282,925.

SOUTHAMPTON CORPORATION. (1) 124 houses. (2) Thornhill. (3) H. Stevens and Co. Ltd., Millbank Street, Southampton. (4) £196,800. Other contracts with A. E. Knight and Son, Shirley Avenue, Southampton. (4) £48,930. H. R. Lane, Blenheim Avenue, Southampton. (4) £24,197 and £24,315.

STAFFORD CORPORATION. (1) 88 houses. (2) Highfield Estate. (3) W. Whittingham Ltd., Brereton Road, Rugeley, Staffs. (1) 24 flats. (3) Geo. Wimpey and Co. Ltd., London, W.6. (4) £36,729.

WORCESTERSHIRE C.C. (1) Comberton Primary School and extensions, Longlans School. (2) Kidderminster. (3) A. H. Guest Ltd., Stourbridge, Worcs. (4) £74,667 and £65,812 respectively. (1) Harbury Farm Secondary School. (3) W. Cooper and Son (Builders) Ltd., West Street, Blackheath, Birmingham. (4) £50,861.

LONDON, S.W. (1) Block of offices. (2) Jermyn Street. (3) Kirk and Kirk Ltd., Upper Richmond Road, London, S.W.15.

WORCESTER PARK, SURREY. (1) 90 flats for Bellingham Properties Ltd. (3) L. C. E. Bellingham Ltd., Kingsmead Road, Worcester Park, Surrey. (4) £250,000.

DEARNE U.D.C. (1) 90 houses. (2) Thurnscoe. (3) T. H. Watford Ltd., Wombwell, near Barnsley. (4) £112,925.

LINCOLNSHIRE RIVER BOARD. (1) Sea wall. (2) Chapel St. Leonards. (3) G. W. Wright, Mablethorpe, Lincs.

BLACKPOOL CORPORATION. (1) 139 houses, 12 flats. (2) Grange Park Estate. (3) Middleton and Co. Ltd., Blackpool. (4) £196,770.

EDMONTON B.C. (1) Completion of housing estate. (2) Potters Bar, Herts. (3) Direct Labour. (4) £454,914.

YORK CITY COUNCIL. (1) 80 houses. (2) Chapel Fields Estate. (3) Sorrell (York) Ltd., York. (4) £96,993.

BRITISH RAILWAYS. (1) Rebuilding railway station. (2) Banbury, Oxon. (3) Marples, Ridgway and Partners, Ltd., 2, Lygon Place, London, S.W.1. (4) £400,000 approximately.

NORTHAMPTON B.C. (1) 38 houses. (2) King's Heath. (3) T. Wilson and Son Ltd., Sheep Street, Northampton. (4) £54,864. (1) 28 houses. (3) Clements Bros. Ltd., Northampton. (4) £43,907.

ECCLES B.C. (1) 174 houses and shops, etc. (2) Brookhouse Estate. (3) Bower Moffatt and Co. Ltd., 17, Park Street, Manchester. (4) £253,207 and £21,145.

CROYDON B.C. (1) 8-storey block of flats. (3) J. Gerrard and Sons Ltd., Victoria House, Southampton Row, London, W.C.1. (4) £58,664.

SALFORD R.C. DIOCESAN TRUSTEES. (1) Erection of St. Patrick's R.C. School. (2) Eccles. (3) J. Cocker (Contractors) Ltd., Station Saw Mills, Walkden, Manchester. Work begun.

STAFFORD. (1) Erection of Church of St. Bertelin. (2) Tillington. (3) Sandy and Co., 2, North Walls, Stafford.

BURNLEY CORPORATION. (1) 74 houses. (2) Far Brunshaw Estate. (3) Middleton and Co. Ltd., Blackpool. (4) £95,643.

BEDFORD B.C. (1) 20 bungalows. (2) Putnoe Estate. (3) J. and B. Sanderson, 17, Caldwell Street, Bedford. (4) £24,447.

N. IRELAND—CO. ARMAGH E.C. (1) County school. (2) Portadown. (3) R. Heathwood, Roslyn Bridge Street, Portadown. (4) £134,666.

LONDON, S.E. (1) Operating theatre. (2) New Cross Hospital. (3) W. R. Oldham Ltd., 242, Perry Hill, London, S.E.6. (4) £30,163.

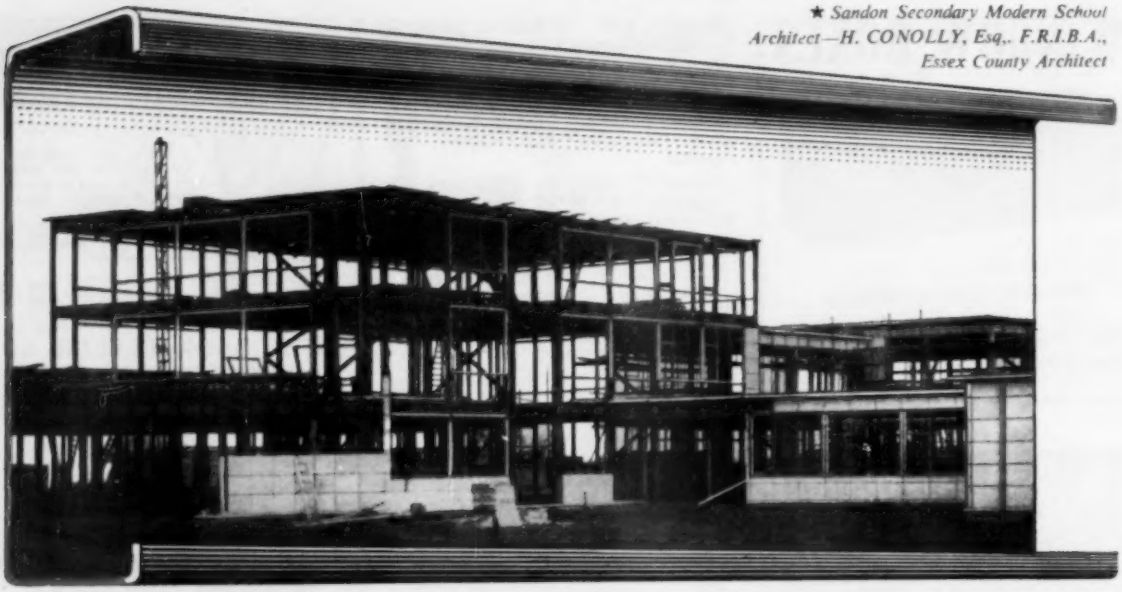
BRISTOL CORPORATION. (1) Library. (2) Southmead. (3) F. Helps and Co. Ltd., 56, Cheriton Place, Bristol. (4) £15,550. (1) Library. (2) Filwood. (3) H. C. Wakefield and Sons Ltd., Whetson Street, Bristol. (4) £14,576.

BARNSLEY B.C. (1) Maternity and child welfare clinic. (2) Lundwood. (3) T. H. Watford Ltd., Wombwell, near Barnsley. (4) £19,752.

CHESTER CITY COUNCIL. (1) 50 "Unity" houses. (3) Lloyd and Cross Ltd., Argyle Street, Birkenhead. (4) £67,515.

BATH CITY COUNCIL. (1) Shops, flats, etc. (2) High Street. (3) E. Mortimer and Son Ltd., High Street, Bath. (4) £38,956.

★ *Sandon Secondary Modern School*
Architect—H. CONOLLY, Esq., F.R.I.B.A., Essex County Architect



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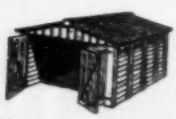

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DHB/2217

OFFICIAL ANNOUNCEMENTS

APPOINTMENTS • CONTRACTS • TENDERS

Rate 1/6 per line, minimum 3/- *Close for press 1st post Monday for following Thursday Issue*

NOTICE

THE ISSUE DATED DECEMBER 22 WILL CLOSE FOR PRESS FIRST POST FRIDAY, DECEMBER 16. DECEMBER 29 ISSUE FIRST POST, THURSDAY DECEMBER 22.

APPOINTMENTS

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

BOROUGH OF LEYTON

(Non-County Borough in County of Essex. Population 103,280. R.V. £784,110).

APPLICATIONS are invited for the following permanent appointments at salaries in accordance with the National Scales indicated:—

(a) TWO ASSISTANT ARCHITECTS, A.P.T. Grade V (£780-£930 per annum);

(b) GENERAL ARCHITECTURAL ASSISTANT, A.P.T. Grade III-IV (£630-£855 per annum).

The above salaries are inclusive of London Weighting (£30) which is reduced according to scale where the age of the successful applicant is less than 26 years. The commencing salaries will be fixed at a point in the scale according to the qualifications and experience of the successful candidate.

Candidates for appointments (a) must be Associates of the Royal Institute of British Architects and must have considerable experience in contemporary design and the construction and supervision of multi-storey flats. Candidates appointed will be employed in connection with the Corporation's extensive programme for Redevelopment Areas.

Candidates for appointment (b) must be Registered Architects and should have good experience in the design, construction and erection of public buildings. The successful candidate will be primarily engaged on the completion of a project for a Central Library.

Housing accommodation may be made available if required.

Alternate Saturday mornings are free of duty and canteen facilities are available in the Town Hall.

Details of the above appointments and forms of application may be obtained from Mr. H. D. Peake, M.Sc.(Eng.), Borough Engineer and Surveyor, Town Hall, Leyton, E.10, to whom they should be returned not later than WEDNESDAY, 28th DECEMBER, 1955.

D. J. OSBORNE,
Town Clerk.

Town Hall,
Leyton, E.10. [1821

PADDINGTON BOROUGH COUNCIL

REQUIRE ARCHITECTURAL ASSISTANT (APT III—£630 to £755 per annum). Candidates should be Inter. R.I.B.A. and be capable of preparing working and detail drawings and sketch drawings of smaller schemes and be quick and competent draughtsmen with an adequate knowledge of building bye-laws, housing manual standards and modern construction technique.—Applications, stating age, qualifications, experience and names and addresses of three referees should reach the undersigned (quoting A.262) by 28th December, 1955.

W. H. BENTLEY,
Town Clerk.

Town Hall,
Paddington Green, W.2. [1845

PADDINGTON BOROUGH COUNCIL

REQUIRE ASSISTANT ARCHITECT (APT V—£780 to £930 per annum). A.R.I.B.A. candidates preferred with some experience in design and supervision of building works of some magnitude and a knowledge of local authority requirements. Applications, stating age, qualifications, experience and names and addresses of three referees, should reach the undersigned (quoting A.261) by 28th December, 1955.

W. H. BENTLEY,
Town Clerk.

Town Hall,
Paddington Green, W.2. [1844

APPOINTMENTS—contd.

BOROUGH OF OLDBURY

BOROUGH SURVEYOR'S DEPARTMENT
ARCHITECTURAL SECTION

APPLICATIONS are invited for the appointment of one Assistant Architect, Grade A.P.T. V (£750 - £900), in the Architectural Section of the Borough Surveyor's Department.

Applicants for the appointment should preferably be Associate Members of the R.I.B.A.

The architect appointed will be required to work primarily on the design and construction of Municipal houses, maisonnettes and multi-storey flats, and previous experience of this type of work is desirable.

The appointment will be superannuable, subject to the National Conditions of Service and to the selected candidate passing a medical examination.

Applications, giving particulars of age, qualifications and experience and the names of two referees, should be delivered to the undersigned not later than Monday, January 2, 1956.

Housing accommodation will be made available to married applicants if required.

KENNETH PEARCE,
Town Clerk.

Municipal Buildings,
Oldbury,
Birmingham.
December 6, 1955. [1834

LONDON ELECTRICITY BOARD

STRUCTURAL ASSISTANTS AND
STRUCTURAL DRAUGHTSMEN

APPLICATIONS are invited for the above positions in the Construction Branch of the Chief Engineer's Department in Central London.

Applicants for the positions of Structural Assistants in the Civil Engineer's Section should experienced in the design and detailing of reinforced concrete, and/or steel framed superstructures and foundations.

Applicants for the positions of Structural Draughtsmen should have a knowledge of building construction requirements and/or some experience in detailing reinforced concrete or steel structures.

The posts are graded under Schedule 'D', National Joint Board agreement, as Grade 5 - £672 to £777 and Grade 6 - £535 10s. to £661 10s. per annum respectively, inclusive of London Allowance. Commencing salaries will be dependent on qualifications and experience.

Application forms, obtainable from Personnel Officer, 46/7, New Broad Street, London, E.C.2., to be returned completed by December 27, 1955. Please enclose addressed envelope and quote reference: V/2003/AA. [1810

DUNDEE COLLEGE OF ART

SCHOOL OF ARCHITECTURE

THE Governors of the Dundee Institute of Art and Technology invite applications for the position of ASSISTANT, GRADE I.

Applicants should be members of the R.I.B.A. and should preferably be holders of a degree or diploma of a recognised School of Architecture.

Salary Scales Men, £690 by £30 to £990; Women, £582 by £25 to £832, with placing according to qualifications and experience. These scales are at present under revision.

Applications should be lodged as soon as possible and should be on the prescribed form, copies of which, with full particulars, may be obtained from the undersigned.

F. RAYMOND WILKINSON,
Clerk and Treasurer.

Bell Street,
Dundee.
December 5, 1955. [1835

COUNTY BOROUGH OF EAST HAM

BONUS SURVEYOR—GRADE II £560-£640)

LONDON Weighting is paid in addition. Salary in excess of the minimum may be paid according to qualifications and experience.

A subsistence allowance may be granted over a reasonable period to the person appointed if unable to obtain suitable housing accommodation, necessitating the maintenance of two homes.

Further details and application forms returnable by 30th December, 1955, from the Town Clerk, Town Hall, East Ham, E.6. [1849

APPOINTMENTS—contd.

PADDINGTON BOROUGH COUNCIL

REQUIRE BUILDING SURVEYING ASSISTANT (APT II—£590 to £670 per annum). Candidates should have practical knowledge of building construction, experience in surveying and levelling, the repair, adaptation and conversion of civil and residential properties, and be capable of preparing plans, specifications and estimates of costs in respect of these works and their supervision. Candidates preferred at advanced stage of preparation for R.I.C.S. Intermediate or equivalent examination. Written applications, stating age, qualifications, experience and names and addresses of three referees, should reach the undersigned (quoting A.263) by 30th December, 1955.

W. H. BENTLEY,
Town Clerk.

Town Hall,
Paddington Green, W.2. [1846

IMPERIAL CHEMICAL INDUSTRIES LIMITED WILTON WORKS

ASSISTANT TECHNICAL OFFICERS

STRUCTURAL

VACANCIES exist in the design organisation employed in the development of a rapidly expanding factory at Wilton Works, situated in the North Riding of Yorkshire four miles from the coastal town of Redcar.

Appointments are to permanent staff with Pension Fund, Profit Sharing Scheme, 5-day working week and excellent Company recreational facilities.

Candidates should have the appropriate National Certificate and previous design office experience.

Reasonable out of pocket expenses will be refunded to applicants invited for interview and after joining the staff, married men will receive a reasonable refund of removal (including travel) expenses; to assist house purchase, facilities are available in approved cases for loans, in addition, legal charges may be advanced.

Write for application form to: Staff Manager, Imperial Chemical Industries Limited, Wilton Works, Middlesbrough, quoting advertisement reference ICI/X270/e. [1847

COUNTY OF HUNTINGDON

COUNTY ARCHITECT'S DEPARTMENT

APPLICATIONS are invited for the following appointments:

(a) A Senior Architectural Assistant, APT 6 (£825-£1,000);

(b) Senior Architectural Assistants, APT 4-5 (£675-£900);

(c) Architectural Assistants, APT 2-3 (£560-£725).

Appointments could be made within these grades subject to qualifications and experience.

Further details and application forms may be obtained from S. M. Holloway, A.R.I.B.A., County Architect, County Buildings, Huntingdon, to whom completed application forms should be forwarded by Monday, 2nd January, 1956.

A. C. AYLWARD,
Clerk of the County Council.

County Buildings,
Huntingdon.
15th December, 1955. [1857

MISCELLANEOUS SECTION

RATE: 1/6d. per line, minimum 3/-, average line 6 words. Each paragraph charged separately.

BOX NOS. add 2 words plus 1/- for registration and forwarding replies which should be addressed c/o "The Architect & Building News," Dorset House, Stamford Street, London, S.E.1.

PRESS DAY Monday. Remittances payable to Iliffe & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.

No responsibility accepted for errors.

ARCHITECTURAL APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

ARCHITECTS' Co-partnership require qualified assistant with experience.—Write 44, Charlotte Street, London, W.1., or telephone Langham 5791. [0002

ARCHITECTS Co-partnership require unmarried, qualified, experienced assistant in their Lagos office. Maximum tour 14 months. Flat provided.—Write 44, Charlotte Street, London, W.1., or telephone Langham 5791. [0001

BASIL Ward requires an Architectural Assistant between Intermediate and Final Standard, preferably with not less than one year's office experience. Salary to be agreed.—Apply 32 Wigmore Street, London, W.1., or telephone WELbeck 1409. [0005

ARCHITECTURAL Assistants, approaching Intermediate stage, required. Up to £500 p.a. Senior Assistants also required. — D. Paskett Marshall, F.R.I.B.A., 59 Gordon Square, W.C.1. MUS. 7176/7. [1800

BUSY London Office requires 2 Architectural Assistants, approximately Intermediate standard or upwards. Also requires one Assistant with considerable perspective experience, particularly able to do quick interior colour sketches. 5-day week, good salaries.—Lewis Solomon, Son & Joseph, 21 Bloomsbury Way, W.C.1., HOL 5108 or 7082. [0004

ARCHITECTURAL ASSISTANTS, up to final standard, required for design work on home and tropical buildings. Salary according to experience.—Apply: E. J. D. Mansfield, A.R.I.B.A., Sir William Halcrow & Partners, Stanhope House, 47 Park Lane, London, W.1. [1807

SCHERRER AND HICKS require a number of Architectural Assistants immediately. Salary £400 - £750 p.a. according to experience. Five-day week with luncheon vouchers.—Write 19 Cavendish Square, W.1., or telephone Museum 1105. [1805

ARCHITECTURAL Assistants about Intermediate standard required in Guildford and London offices. Varied work on contemporary designs. Time for study.—Apply Brownrigg & Turner, 163 High Street, Guildford. Phone Guildford 2824. [1822

B.B.C. requires Architectural Assistants in London for work on design of studio, transmitter and office premises. Candidates should be up to Inter-few year's office experience. Salary in scale £620-£830 mediate or Final R.I.B.A. standard with preferably or £725 - £960 according to qualifications and experience. — Requests for application forms to Engineering Establishment Officer, Broadcasting House, London, W.1., within 7 days, quoting ref. EX. 74 A.B.N. [1833

EXPERIENCED Senior and Junior Assistants required. Innate design sense essential with office experience and capable draughtsmanship. Varied work. Responsibility and salary according to ability.—Write: David Stern, 24, Gloucester Place, London, W.1. [1832

ARCHITECTS' ASSISTANT required of R.I.B.A. Final Standard. Educational, domestic and general works. Salary to be agreed according to ability.—Write, stating experience, age, etc., to Box 8149, c/o A. & B. N. [1831

ARCHITECT'S ASSISTANT required. Varied and interesting practice. City centre, Birmingham.—Box 8148, c/o A. & B. N. [1830

ARCHITECTURAL DRAUGHTSMAN, intermediate standard with previous office experience. — Apply Cable & Pite, F/F.R.I.B.A., South Park, Sevenoaks, Kent, stating age, training and salary required. [1829

ARCHITECTURAL ASSISTANT required urgently. Intermediate R.I.B.A. standard and preferably of some experience. — Applications, giving qualifications and salary required to GRAHAM & ROY, Chartered Architects, 6 Paternoster Row, Carlisle. [1828

ARCHITECTURAL ASSISTANTS required, of Final and Intermediate standard. Opportunity to work on large scale projects of contemporary design. Salary commensurate with experience. Five day week.—Ring LIBerty 1189 for appointment. [1827

AIR MINISTRY works Designs Branch requires in London and Provinces (with liability for overseas service) ARCHITECTURAL ASSISTANTS experienced in planning - preparation of working drawings and details for permanent and semi-permanent buildings. Salaries up to £850 (men) and £736 p.a. (women). Starting pay dependent on age, quals. and experience. Paid overtime. Long term possibilities with promotion and pensionable prospects. 4 weeks' leave a year. Natural born British subjects. — Write stating age, quals., employment details including type of work done to any Employment Exchange, quoting Order No. Borough 2303. [1754

ARCHITECTURAL APPOINTMENTS VACANT—contd.

HENING & CHITTY, F.R.I.B.A., have vacancies to run important job; Job Leader (£1,000 to £1,200). Architects (£750 to £900), also juniors. — Write with full particulars to 20, Gower Street, W.C.1. [1758

ARCHITECTURAL ASSISTANCE required for interesting and varied work with small but expanding firm in rural area of North Essex. — Box No. 7690, c/o A. & B.N. [1759

BRITISH TRANSPORT COMMISSION require Senior Assistant Architect in the office of their Architect in London. Salary range £1,050/£1,250. Must be Associate R.I.B.A., able designer and draughtsman with several years practical experience. Superannuation scheme. Medical examination. Certain travelling facilities. — Write, stating age, qualifications, experience, to Manpower Adviser, British Transport Commission, 222, Marylebone Road, London, N.W.1. [1840

ASSISTANT required for busy small private office near Birmingham. Not below Intermediate standard. Salary £575 p.a. upwards according to ability and experience.—Apply with full particulars: Box No. 8188, c/o A. & B.N. [1839

ARCHITECTURAL Assistants, Intermediate Standard, required for work on development and construction of factory extensions, also on proposed large, new factories in North-East London area. Positions offered are permanent with good opportunities and are pensionable. Modern welfare amenities.—Apply Personnel Superintendent, The Edison Swan Electric Co., Ltd., Cosmos Works, Brimsdown, Enfield, Middlesex. [1841

GOODHART-RENDEL, BROADBENT & CURTIS require two architectural assistants of Intermediate standard; chiefly for school work. Good knowledge construction, working drawings, details. Salary according to experience and ability.—22 Whitehall, S.W.1. WHITEHALL 8286. [1842

ESTABLISHED firm of Architects with large and expanding practice in West of England, requires able and experienced architect (qualified R.I.B.A.) as office manager, with view partnership. Must have sound business acumen and be able to take part control if necessary. — Apply Box No. 8226 c/o A. & B.N. [1848

SMALL property company (London) require an assistant, capable carrying through development of small building estates, conversions, etc. — Write particulars of experience and salary required to Box 8227, c/o A. & B.N. [1850

A DESIGN Office working on new projects covering Excavators and other Civil Engineering Construction equipment offers interesting opportunity for DESIGNER / DRAUGHTSMAN, preferably with mechanical and structural experience. Write or phone Personnel Manager, Blaw Knox Ltd., Bushey Mill Lane, Watford. (Telephone: Watford 9291 [1851

ARCHITECT required by Civil Engineering Contractors with Head Office in the Midlands area. This appointment is one offering an outstanding opportunity for a man fully qualified in his profession and experienced in industrial contracts. — Apply in writing to Box No. 8229, c/o A. & B.N. [1854

BUILDING SURVEYOR required by Chartered Surveyors in Westminster for preparation of schedules of dilapidation and specifications for maintenance and conversion work. Good knowledge of pricing desirable and experience of structural surveys an advantage.—Apply in writing, giving age, details of experience, salary required, etc., to Box No. 27, c/o White's Ltd., 72/78, Fleet Street, E.C.4. [1855

EXPERIENCED BUILDING SURVEYOR required by Westminster firm of Chartered Surveyors, age 35/45. Varied work includes schedules of dilapidation, specifications for, and supervision of, maintenance and conversion work, structural surveys, etc. Sound knowledge of construction and pricing essential.—Apply in writing, stating age, details of experience, salary required, etc., to Box No. 30, c/o White's Ltd., 72/78, Fleet Street, E.C.4. [1856

SITUATIONS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

MAINTENANCE Supervisor required for group of West End Hotels. Interesting and varied work covering maintenance, improvement schemes and construction. Excellent prospects and good remuneration for the right applicant. — Write, stating experience, to Box No. 8219. [1843

REQUIRED: One Junior Assistant and one Assistant of Intermediate standard.—Please reply to P. A. Cranswick Esq., A.R.I.B.A., A.M.T.P.I., 36 Sackville Street, London, W.1. [1853

SITUATIONS VACANT—cont.

DESIGNER required for general industrial building and civil engineering at large factory in North Midlands. Age 30-40. Experienced factory building design, surveys, roads, drainage, reinforced concrete and steel structures. Some architectural experience useful but not essential. This appointment carries a good salary, is pensionable and if necessary assistance with housing will be given. — Write in confidence stating age, qualifications and experience to EP Department., Michelin Tyre Co. Ltd., Stoke-on-Trent. [1852

SERVICES OFFERED

GOOD lettering is essential for commemorative wall tablets, foundation stones, etc. Designs prepared and estimates given for the finished work in any suitable material. Renowned as a centre for lettering since 1934. Sculptured Memorials, 67 Ebury Street, S.W.1. Sloane 6549. [0263

FOR London and Home Counties only. Have you a Flat Roofing Problem? If so have it attended to by the Composite Flat Roofing Co., Specialists in Mastic Asphalt and Felt Roofings, also attendant prefabricated zinc or copper flashings, for flat roofs, gutters and slopes. — Inquiries invited to 2, Grove Road West, Enfield, Middlesex. Phone: Howard 1096. [1836

DICK HAMPTON offers his services as a consultant to engineers, architects, quarrying operators, etc., in matters involving surface excavation. Fees by arrangement.—Broadview, Blacknest, Alton, Hants. Tel. Bentley 2241. [1838

SERVICES WANTED

THE Architects' Journal invite applications from Architects or Draughtsmen who are exceptionally skilled at ink drawing and who would be willing to prepare Working Details for publication on a part-time basis.—Apply to the Technical Editor, The Architects' Journal, 9-13 Queen Anne's Gate, S.W.1. [0094

FOR SALE

ALL hardwood mouldings, plain and embossed, embossed ornaments and dowels; send for catalogue and to-day's lowest trade prices.—Dareve's Moulding Mills, Ltd., 60 Pownall Road, Dalston, E.8. Clissold 1543/4. [0142

JOINTLESS composition flooring in attractive colour range—quotations free.—Full particulars from the Liotex Asbestos Flooring Co. Ltd., 3, Corbetts Passage, London, S.E.16 (Dept. A). Bermondsey 4341-2-3. [0622

RECONDITIONED ex-Army Huts & Manufactured Buildings, Timber, Asbestos, Nissen Type, Hall Type, etc. All sizes and prices. Write, call or telephone. Universal Supplies (Belvedere), Ltd., Crabtree Manorway, Belvedere, Kent. Tel.: Erith 2948. [0005

HARDCORE, Walling Stone and Pitching delivered or collected from quarries at Fish Hill, near Broadway, Worcs. and Hornsleasow, near Bourton-on-the-Hill, Glos.—Apply to Baillie, Brind & Co., Ltd., Prudential Chambers, Banbury, Oxon. [0082

DOORS, flush, 4-panel, exterior and interior. Large stock to select from. 25s. each. Hardboard, Plywood and Timber. List 2½d. stamp.—Spiers, 330, Hackney Road, London, E.2. Phones: Shoreditch 8791-2-3-4. [0092

SEVERAL 3 cu. yd. Aveling Barford Diesel driv. Shuttle Dumpers, with Quarry bodies and cabs, new 1955.

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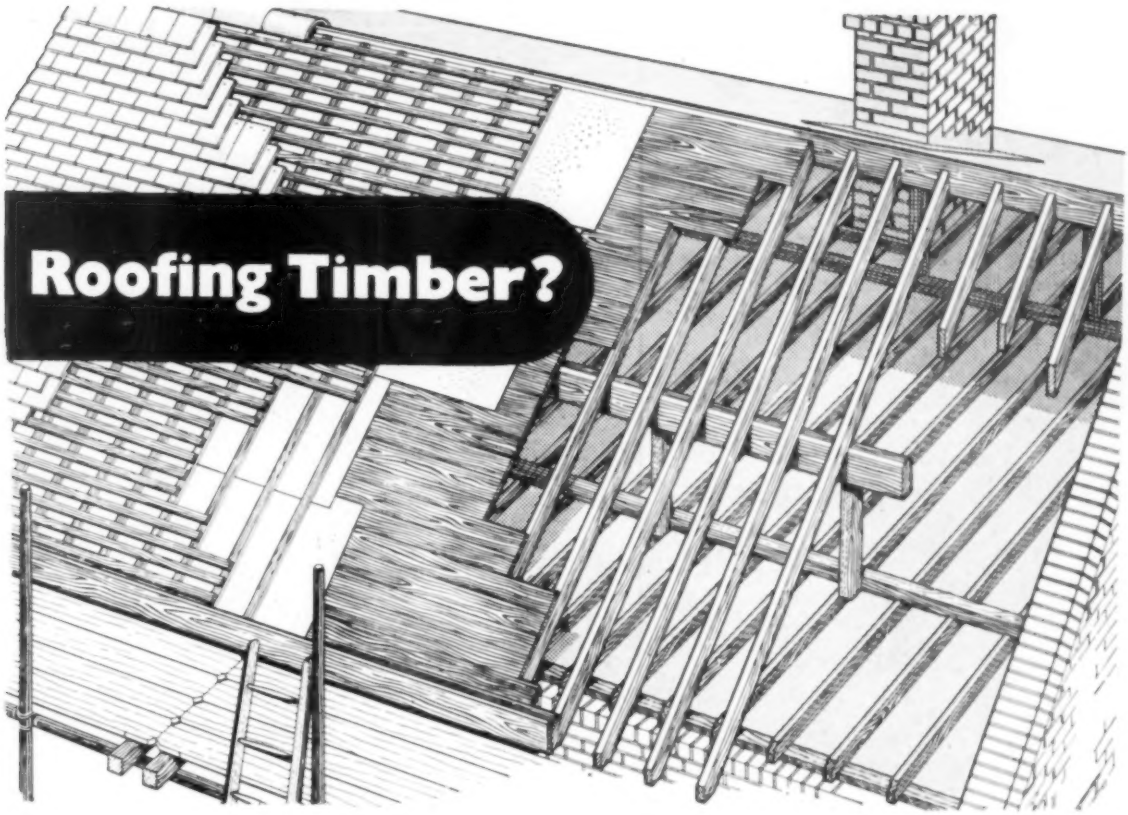

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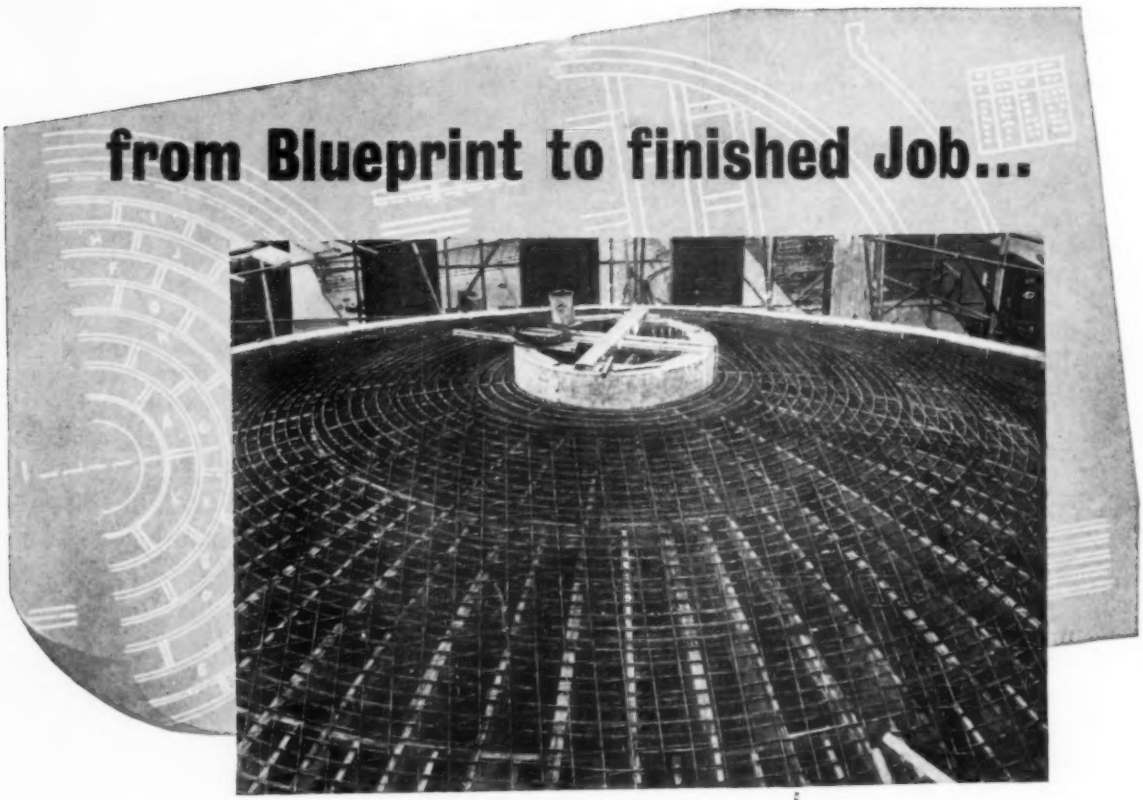

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